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1.0 Introduction

The Washington Statewide Transportation Framework Project (WA-Trans) was organized to create an electronic map and spatial data set of transportation data for use in Geographic Information Systems (GIS) across the state. The WA-Trans partners have delegated the development of the Transportation Framework Data Standards to the WA-Trans steering committee. These standards are comprised of road, rail, transit, ferries, air, and non-mechanized transportations modes. The data standards will be used as a guideline for data collection during two pilot projects in the Puget Sound and along the Oregon-Washington border. These standards will be adjusted as necessary as experience is steadily being acquired during these pilot projects.

1.1 Mission and Goals of the Data Standards

The WA-Trans Data Standard will enhance the will and ability of partners to collect and maintain the data, and to allow data quality to improve over time for long-term data maintenance and updates. This process will also help participants recognize the capabilities of existing technology and upgrade their technology as it advances.

1.2 Intended use description

The purpose of the WA-Trans Data Standards is to create a set of common requirements for the collection and exchange of information from a variety of spatial and tabular data sources (GIS, CAD, etc.) This information will create a statewide set of data layers developed as a comprehensive transportation network.

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2.0 Scope – Basic Overview of data types, mechanisms

The scope of the WA-Trans Data Standards identifies the modes of transportation data to be collected. It also includes the geographic extent, scale, datum, metadata, linear referencing, feature attributes, and data quality. Other relevant information can be found in the WA-Trans Data Model, Architecture and Processes documentation.

2.1 Definitions

Term	Definition
SEGMENT (Line)	A segment is spatial data term meaning a line that has a start and an end point. The line between the end points can be straight or curved.
EVENT	An event is a geographic location, which may be a single specific point, or a portion of a finite distance along a line, which is located along a linear route relative to a fixed starting point. Event positions are measured/calculated from a defined point and depict occurrences along a line as measured from that defined starting point. Event types include address events, route events, x y events, and temporal events, all of which can be viewed in a GIS as if it were a part of the spatial data.
POINT	A point is a single object with a specific geographic location. Point data can be based on dynamic segmentation of roadways (using mileposts or distance from intersection), x, y coordinates from GPS, or geocoded addressing information. It is typically a zero-dimensional abstraction of an object that usually represents a geographic feature too small to be displayed as a line or area at that scale.
POLYGON	A polygon is a closed, two-dimensional figure with at least three sides that represents an area. It is used in GIS to describe spatial elements with a discrete area, such as parcels, political districts, homogeneous land use, and soil types. Polygon data layers will be used as a reference for clipping other data layers.
SEGMENT MODE	The mode of transportation associated with a particular line segment
FEATURE	A representation of a real-world object on a map. Features can be represented in a database (or a GIS) as vector data (points, lines, or polygons) or as cells in a raster data format. Features can also be a group of spatial elements that together represent a real-world entity. A complex feature is made up of more than one group of spatial elements: for example, a set of line elements with the common theme of roads representing a road network.
ENTITY	A collection of objects (persons, places, things) described by the same attributes. Entities in the case of WA-Trans are identified during the conceptual design phase of database and application design.
TOPOLOGY	The spatial relationships between connecting or adjacent features (e.g., arcs, nodes, polygons, points and pixels). The geometric relationships are determined mathematically between connecting or adjacent features in a geographic data set. Topology may include information about connectivity, direction, length, adjacency, and polygon definition. Topology is what makes most types of geographic analysis in a GIS possible because it allows the analysis of spatial relationships between features.
ATTRIBUTE	Descriptive information or an inherent characteristic about a feature or entity. Typically used in a database to describe features or entities as they exist in the real world, and linked to other attributes and information through related tables by a unique identifier.
METADATA	Properties and documentation about the content, quality, condition, and other characteristics of data. Metadata for geographic data may document its subject matter; how, when, where, and by whom the data was collected; accuracy; availability, distribution information, projection, scale, resolution, accuracy, and its reliability with regard to some standard. Not to be confused with attribute data, which describes the feature in the real world (as noted above).
CONCATENATE	To join two or more character strings together, end to end, this creates one unique string.
CONFLATION	A set of procedures that aligns the features of two geographic data layers and then transfers the attributes of one to the other.

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2.2 Symbols and Abbreviations

The [Blue](#) Descriptions are links to related data on We sites.

Abbreviation	Description
BLM	Bureau of Land Management
BLM GTN	BLM Ground Transportation (Roads & Trails)
BMS	Bridge Management Systems
CRAB	County Road Administration Board (Washington)
CRIS	County Road Information System (Washington). The system that will eventually replace CRIS is called Mobility.
CAD	Computer Aided Design
CADD	Computer Aided Design & Drafting
COG	<i>Council of Governments</i>
CSDGM	Content Standard for Digital Geospatial Metadata (Working subset metadata standard)
CTM	Cooperative Topographic Mapping (USGS)
DSA	<i>Data Sharing Agreement</i>
FGDC	Federal Geographic Data Committee
FMG	Framework Management Group (<i>WAGIC</i>)
FTRP	Framework Transportation Segment Reference Point - "Specified location of a (required) endpoint of a Framework Transportation Segment (FTSeg), or an (optional) reference point offset along the length of the FTSeg, on a physical transportation system". NSDI Framework Transportation Identification Standard, page 27.
FTSeg	Framework Transportation Segment
GBF	Geographic Base File
GDT	Geographic Data Technology (Commercially available integrated roadway data)
GIS	Geographic Information System
GPS	Global Positioning System
HOV	High Occupancy Vehicle (as in HOV Lanes)
IRICC	Interagency Resource Information Coordinating Council
ISB	Information Services Board (WSDoT Geographic Information Technology Subcommittee)
LLRS	Linear Location Reference System
LOS	Level of Service
LRS	Linear Reference System (PDF)
MPO	Metropolitan Planning Organization (e.g. COG, SRTC etc.)
MSAG	Master Street Address Guide (911 data)
NAD	North American Datum
NCHRP	National Cooperative Highway Research Program
NHS	National Highway System
NIMA	National Imagery and Mapping Agency (USGS)
NSDI	National Spatial Data Infrastructure
ODOT	Oregon State Department of Transportation
PMS	Pavement Management Systems
PSRC	Puget Sound Regional Council
REO	Regional Ecosystem Office
RRT	Related Route Type
SDTS	Spatial Data Transfer Standard
TIGER	Topologically Integrated Geographic Encoding and Referencing - US Census database with roads and ranges of street addresses
USFS	United States Forest Service
USGS	United States Geological Survey
USGS DLG	United States Geological Survey Digital Line Graph (USGS format digital vector representation of cartographic information)
USPS	United States Postal Service
WAGDA	Washington Geospatial Data Archive (<i>U of W</i>)
WAGIC	Washington State Geographic Information Council
(WA) DNR	(Washington State) Department of Natural Resources
WA-Trans/WA-TRANS	Washington Transportation Framework for GIS
WSDOT/WSDoT	Washington State Department of Transportation
WUTC	Washington Utilities and Transportation Commission

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3.0 Data Characteristics

The following data characteristics outline included attribution for all transportation modes and attribution for specific transportation modes. These requirements are subject to change based on findings during the two pilot projects. An “(R)” before the attribute name indicates a required field for data stewards to provide to WA-Trans. An “(R*)” before the attribute name indicates a required field in specific circumstances as described in the definition following the attribute.

3.1 WA-Trans Attribution

3.1.1 Points

Reference Point		The specified location of the (required) points [From/To] of a Framework Transportation Segment (FTSeg), or an (optional) reference point offset along the length of the FTSeg, on a physical transportation system. A zero dimensional object that specifies geometric location. A pair (e.g., "x, y") or triplet (e.g., "x, y, z") of coordinates specifies the location (SDTS). Includes the location of transportation terminals such as airports, train stations and ferry terminals.
Reference Point Identifier	CHAR(36)	Surrogate Key. A GUID generated by database processes upon insertion of a record. Used to uniquely identify a record within the database.
(R) OBJECTID	INTEGER	Identifier applied by GIS Software
(R) SHAPE	INTEGER	Reference to the Geo-Spatial aspects of the data.
Reference Point Survey Description	VARCHAR(255)	Narrative pertaining to the survey performed on the Reference Point.
Reference Point Object Code	CHAR(1)	Object code indicating that a particular piece of data is a point. (FW-part of Trans. Point ID).
(R) Reference Point Location Description	VARCHAR(255)	An unambiguous description of the Reference Point, which makes it field recoverable. (FW-Location Description).
(R) Reference Point Northing	DECIMAL(10,3)	The distance northward of a point from a given parallel indicated by a map grid reference, calculated in US Survey Feet. Can be viewed as the local y coordinate.
(R) Reference Point Easting	DECIMAL(10,3)	The distance eastward of a point from a given meridian indicated by a map grid reference, calculated in US Survey Feet. Can be viewed as the local x coordinate.
(R) Reference Point Create Date	DATE	Date assigned to Reference Point that indicates the date that road Reference Point data was created in the WA-Trans database.
Reference Point Update Date	DATE	Date assigned to Reference Point that indicates the date that road Reference Point data was updated in the WA-Trans database.
Reference Point Validate Date	DATE	Date assigned to Reference Point that indicates the date that road Reference Point data was validated (verified).
Reference Point Retire Date	DATE	Date assigned to Reference Point that indicates the date that road Reference Point data was retired in the WA-Trans database.
(R*) FIPS State Identifier	VARCHAR(2)	Federal Information Processing Standard number identifying the State where data originated. This data required for terminal or station information. WA-Trans is using the FIPS alpha not the FIPS number identifier.
(R*) FIPS County Identifier	VARCHAR(3)	Federal Information Processing Standard number identifying the County where data originated. This data required for terminal or station information. The FIPS county codes are three characters to maintain the leading zeros in the number. These codes are unique <u>only</u> within a particular state.
FIPS City Identifier	VARCHAR(5)	Federal Information Processing Standard number identifying the city Reference Point is identified with.
(R) Reference Point Agreement Identifier	INTEGER	Foreign Key into the Reference Point Agreement Table.
(R) Reference Point Type Identifier	INTEGER	Foreign key into the Reference Point Type table.
(R) Reference Point Data Steward Identifier	INTEGER	Foreign key into the Stakeholder table.
(R) Status Identifier	INTEGER	Foreign key into the Status table.
(R) Horizontal Accuracy Measurement Method Identifier	INTEGER	Foreign key into the Horizontal Accuracy Measurement Method table.
(R) Reference Data Set Id	INTEGER	Foreign key into the Reference Data Set table.

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Reference Point Address		Reference Point Address. This allows for address points as well and multiple addresses for a reference point.
Reference Point Address Id	CHAR(36)	Surrogate Key. A GUID generated by database processes upon insertion of a record. Used to uniquely identify a record within the database.
(R) OBJECTID	INTEGER	Identifier applied by GIS Software.
(R) Reference Point Address	VARCHAR(10)	Street Address. This data required for terminal or station information.
Reference Point Address Prefix Direction	VARCHAR(10)	N, NW, S, SW, SE, E, NE
Reference Point Address Prefix Type	VARCHAR(15)	Used to describe the road direction if it is incorporated into the beginning of the road name. N, NW, S, SW, SE, E, NE (e.g. SW Main Street).
Reference Point Address Road Name	VARCHAR(50)	The name of the road
Reference Point Address Suffix Direction	VARCHAR(10)	Use to describe the road direction if it is incorporated into the end of the road name. N, NW, S, SW, SE, E, NE (e.g. Main St. SW)
Reference Point Address Suffix Type	VARCHAR(15)	The type of roadway, as per US Postal Addressing Standards. Avenue, Street, Lane, Highway, Road etc
Reference Point Zip Code	VARCHAR(10)	Associated Zip Code. This data required for terminal or station information.
Reference Point Full Street Name	VARCHAR(125)	The concatenation of the following fields in the order listed: Prefix Direction, Prefix Type, Road Name, Suffix Type, Suffix Direction. This data required for terminal or station information.
Reference Point Address City Name	VARCHAR(60)	The name of the City used in the address. This may or may not be the City identified by the FIPS City Identifier.
Reference Point Identifier	CHAR(36)	Foreign key into the Reference Point table.
Reference Point Airport Identifier	CHAR(36)	Foreign key into the Reference Point Airport table.
Reference Point Ferry Identifier	CHAR(36)	Foreign key into the Reference Point Ferry table.
Reference Point Rail Identifier	CHAR(36)	Foreign key into the Reference Point Rail table.

Stakeholder Reference Point		Indicates the Stakeholder's Reference Point Identifier that is associated with the WA-Trans Reference Point Identifier.
Stakeholder Reference Point Identifier	INTEGER	Surrogate Key. Sequential number auto-generated by the database upon insertion of a record. Used to uniquely identify a Reference Point Type record within the database.
(R) OBJECTID	INTEGER	Identifier applied by GIS Software.
(R) Stakeholder Identifier	INTEGER	Foreign key that identifies the Stakeholder the Local Identifier belongs to.
(R) Reference Point Identifier	CHAR(36)	Foreign key that identifies the WA-Trans Reference Point Identifier the Local Identifier is associated with.
Reference Point Local Identifier	VARCHAR (9)	Identifier assigned to Reference Point by the Stakeholder (if applicable).

Reference Point Agreement		An agreement between two parties, who possess overlapping data sets, and who share data boundaries, over the location of shared map features.
Reference Point Agreement Identifier	INTEGER	Surrogate Key. Sequential number auto-generated by the database upon insertion of a record. Used to uniquely identify a Reference Point Agreement record within the database.
(R) OBJECTID	INTEGER	Identifier applied by GIS Software.
Reference Point Agreement Document Description	VARCHAR (255)	A record that describes the spatial agreement between entities of a feature.

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Reference Point Type		Defines the nature of a discrete geographic location. Possible values include: <ul style="list-style-type: none"> • Jurisdictional Boundaries • Transportation Terminal • Intersection (within a mode) • Multi-Modal Intersection (intersection of one mode with a different mode)
Reference Point Type Identifier	INTEGER	Surrogate Key. Sequential number auto-generated by the database upon insertion of a record. Used to uniquely identify a Reference Point Type record within the database.
(R) OBJECTID	INTEGER	Identifier applied by GIS Software.
(R) Reference Point Type Name	VARCHAR (50)	Code that identifies the type of reference point
(R) Reference Point Type Description	VARCHAR (500)	A description of the type of reference point (as noted above)

Reference Point Mode Order		Indicates the order of the reference point for a particular mode. A reference point may have different importance to different modes. Defines the nature of the point of record:
Reference Point Identifier	CHAR(36)	A GUID from the Reference Point table and used with the Mode Type Identifier is used to identify the Reference Point with a Mode Type
(R) Mode Type Identifier	INTEGER	Part of the Primary Key and is from the Mode Type table that identifies the transportation mode of the point.
OBJECTID	INTEGER	Identifier applied by GIS Software.
(R) Reference Point Mode Order Indicator	VARCHAR(5)	Defines the nature of the point of record: 1st order - a point where a segment is broken; e.g. begin/end 2nd order - point not at the break of a segment, but where there is facility information, specifically public/private road at-grade intersections. Perhaps we can define additional 'orders' for road/rail at-grade intersections, etc. *Note: The same Reference Point can be a different 'order' for different modes. An example is where a bike lane joins a road segment. The point it joins is a first order point for the bike lane as it is the end point for the segment, but for the road, it is a second order point to indicate it is a point of interest, but not a break in the segment.

Horizontal Accuracy Measurement Method		Contains data pertaining to horizontal accuracy and measurement method of a Reference Point
Horizontal Accuracy Measurement Method Identifier	INTEGER	Surrogate Key. Sequential number auto-generated by the database upon insertion of a record. Used to uniquely identify a Horizontal Accuracy Measurement Method record within the database.
(R) OBJECTID	INTEGER	Identifier applied by GIS Software.
(R) Horizontal Accuracy Measurement Method Code	CHAR(3)	A three character code which describes the derivation of the horizontal position and which allows the user to assess the accuracy and precision of the point x and y position. (FW-Horizontal-Accuracy-Measurement-Method).
(R) Horizontal Accuracy Measurement Method Code Description	VARCHAR(255)	Narrative description of the three character code, which describes the derivation of the horizontal position and which allows the user to assess the accuracy and precision of the points x and y position. (FW-Horizontal-Accuracy-Measurement-Method).
(R) Horizontal Accuracy Measurement Method Datum Description	VARCHAR(255)	A description of the datum that was being used during the capture and creation of the original data
(R) Horizontal Accuracy Measurement Method Projection Description	VARCHAR(100)	A description of the projection that was being used during the capture and creation of the original data

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3.1.2 Segment Data

Segment		A specified directed path between two Framework Transportation Segment Reference Points along a physical transportation system that identifies a unique segment of that physical system. The NSDI Framework Transportation Identification Standards states that Segments must not span State or international borders.
Segment Identifier	CHAR(36)	Surrogate Key. A GUID generated by database processes upon insertion of a record. Used to uniquely identify a Segment record within the database.
(R) OBJECTID	INTEGER	Identifier applied by GIS Software.
(R) Segment Local Identifier	VARCHAR(9)	Identifier assigned to the Segment by the data steward.
Segment Length	DECIMAL(10,3)	The linear measurement of the segment from one end point to the other. All measurements will be in US Survey Feet.
(R) Segment Create Date	DATE	Date assigned to the Segment that indicates the date that the segment data was created.
Segment Update Date	DATE	Date assigned to the Segment that indicates the date that the segment data was updated.
Segment Validate Date	DATE	Date assigned to the Segment that indicates when that the segment data was validated (verified).
Segment Retire Date	DATE	Date assigned to the Segment that indicates the date that the segment data was retired.
Segment Object Code	CHAR(1)	Object code indicating that a particular piece of data is a segment. (FW-part of Trans. Segment ID).
Segment Length	DECIMAL(10,3)	The linear measurement of the segment from one end point to the other. All measurements will be in US Survey Feet.
Horizontal Accuracy Measurement Method Identifier	INTEGER	Contains identifier that relates to table containing the horizontal accuracy and measurement method used to acquire a Reference Point
(R) Infrastructure Owner Identifier	INTEGER	Code relating to the owner of the physical infrastructure.
(R) Infrastructure Maintainer Identifier	INTEGER	Code relating to the entity responsible for maintaining the physical infrastructure
(R) Data Steward Identifier	INTEGER	Code relating to the entity that is the data steward
(R) Status Identifier	INTEGER	Foreign key into the Segment Status table.
Segment Ramp Flag	BOOLEAN	Indicates if a segment is a Ramp Feature.
(R) Mode Type Identifier	INTEGER	Reference to the Mode Type of this segment (See Mode Type)
Segment Physical Inception Date	DATE	The date the physical infrastructure represented by the segment was operational for use.
Segment Physical Create Date	DATE	The date the physical infrastructure represented by the segment was created/built.
Segment Physical Retire Date	DATE	The date the physical infrastructure of the segment was removed from operational use.
(R) Reference Data Set Id	INTEGER	Foreign key into the Reference Data Set table.

Segment Geometry		Stores the Segment Geometry allowing for multiple geometries within WA-Trans.
OBJECTID	INTEGER	Surrogate Key. Identifier applied by GIS Software upon insertion of a record. Used to uniquely identify a Segment Geometry for a Segment record within the database.
(R) SHAPE	INTEGER	Reference to the Geo-Spatial aspects of the data.
(R) Segment Geometry	LARGE BINARY	Identifier assigned to Transportation Segment Description by Mode Data Steward (if applicable). Examples: County Road Number, City Street Name (Main St.), State Route Number (005) etc.
(R) Segment Identifier	CHAR(36)	Foreign key into the segment table identifying the segment the geometry is related to.

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(R) Segment Geometry Create Date	DATE	Date assigned to the Segment Geometry that indicates the date that the data was created.
Segment Geometry Update Date	DATE	Date assigned to the Segment Geometry that indicates the date that the data was updated.
Segment Geometry Validate Date	DATE	Date assigned to the Segment Geometry that indicates when that the data was validated (verified).
Segment Geometry Retire Date	DATE	Date assigned to the Segment Geometry that indicates the date that the segment data was retired.
Preferred Flag	BOOLEAN	Indicates if this is the preferred geometry for a Segment. Other geometries can be included in the database, but will be considered alternatives and not preferred.

Segment Description		Descriptive data pertaining to segments regardless of mode type. Specific descriptive data for each mode is handled in separate mode description tables.
Segment Description Identifier	CHAR(36)	Surrogate Key. A GUID generated by database processes upon insertion of a record. Used to uniquely identify a Segment Description record within the database.
(R) OBJECTID	INTEGER	Identifier applied by GIS Software.
(R) Segment Description Local LRS Identifier	VARCHAR(15)	Identifier assigned to Transportation Segment Description by Mode Data Steward (if applicable). Examples: County Road Number, City Street Name (Main St.), State Route Number (005) etc.
(R) Segment Description Full LRS Description	VARCHAR(25)	<p>The unique identifier of the LRS that assures a distinction between segments that may have the same Local Identifier; e.g. Main St. This field is created by WA-Trans concatenating the following fields together:</p> <p>FIPS State Code (2 characters)</p> <ul style="list-style-type: none"> StakeholderId (4 characters ONLY) ModelId (2 characters only) Local Identifier (15 characters) <p>*SPECIAL NOTE: This schema requires /assumes the following:</p> <ol style="list-style-type: none"> The Stakeholder specified WILL be the Owner of the physical infrastructure. Leading zeros will be added to id fields not yet 4 characters long (e.g. 1 becomes 0001, etc.) We will have no more than 3.1. 9999 Authorities; 3.2. 99 Modes <p>The entire structure of this field will be modified if higher numbers are needed</p>
(R) Segment Description Begin Milepoint	DECIMAL(6,3)	Milepoint describing the beginning of a segment as it relates to the segment description, assigned by the Road Data Steward.
(R) Segment Description End Milepoint	DECIMAL(6,3)	Milepoint describing the ending of a segment as it relates to the segment description, assigned by the Data provider Steward.
Segment Description Path Description	VARCHAR(255)	Description assigned to segment by Stakeholder that describes the segment circumstances.
(R) Segment Description Create Date	DATE	Date assigned to the Segment Description that indicates the date the segment description was created in WA-Trans.
Segment Description Update Date	DATE	Date assigned to the Segment Description that indicates the segment data update date in the WA-Trans database.
Segment Description Validate Date	DATE	Date assigned to Transportation Segment Description that indicates the segment data validation date.
Segment Description Retire Date	DATE	Date assigned to the Segment Description that indicates the segment data retirement date.
Segment Description Local Length	DECIMAL (10,3)	A measured length of a segment described by the Length Accuracy Measurement Method Code (FW-Length, T-FIT-Length).
Segment Description Local Length Measurement Unit	VARCHAR (30)	The rudimentary unit of measure use by the local data steward based on the measurement system they use (e.g. feet, meter, mile).
FIPS State Identifier	VARCHAR (2)	Federal Information Processing Standard number identifying the State where data originated
FIPS Left County Identifier	VARCHAR (3)	Federal Information Processing Standard number identifying the county to the left of the line segment
FIPS Right County Identifier	VARCHAR (3)	Federal Information Processing Standard number identifying the county to the right of the line segment
FIPS Left City Identifier	VARCHAR (5)	Federal Information Processing Standard number identifying the city to the left of the line segment
FIPS Right City Identifier	VARCHAR (5)	Federal Information Processing Standard number identifying the city to the right of the line segment
Length Accuracy Measurement Method Identifier	INTEGER	Link to length accuracy measurement table - explains method of data capture

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(R) Segment Identifier	CHAR(36)	Foreign key into the segment table identifying the segment this description pertains to.
(R) To Segment Point	CHAR(36)	Foreign key into the Reference Point table that identifies the "TO" Reference Point of a given line segment.
(R) From Segment Point	CHAR(36)	Foreign key into the Reference Point table that the "FROM" Reference Point of a given line segment.
(R) Segment Description Steward Identifier	INTEGER	Foreign key into the Stakeholder table identifying the steward of the data and other related information.
(R) Status Identifier	INTEGER	Foreign key into the Segment Status Table.
(R) Reference Data Set Id	INTEGER	Foreign key into the Reference Data Set table.

Segment Description Road		Descriptive data pertaining to road segments.
Segment Description Road Identifier	CHAR(36)	Surrogate Key. A GUID generated by database processes upon insertion of a record. Used to uniquely identify a Segment Description Road record within the database.
(R) OBJECTID	INTEGER	Identifier applied by GIS Software.
(R) Segment Description Road Full Street Name	VARCHAR(125)	The concatenation of the following fields in the order listed: Prefix Direction, Prefix Type, Road Name, Suffix Type, Suffix Direction
Segment Description Alternate Name Flag	BOOLEAN	Indicates if the Description record is an alternate, 'common' name as opposed to an official name given by the owner of the segment.
(R) Segment Description Road Left Low Address	VARCHAR(10)	Describes the left low address of a road segment as it relates to the Road Segment Description, assigned by the Road Data Steward.
(R) Segment Description Road Left High Address	VARCHAR(10)	Describes the left high address of a road segment as it relates to the Road Segment Description, assigned by the Road Data Steward.
(R) Segment Description Road Left Zip Code	VARCHAR(10)	Zip Code of address to the left of the line segment
(R) Segment Description Road Right Low Address	VARCHAR(10)	Describes the right low address of a road segment as it relates to the Road Segment Description, assigned by the Road Data Steward.
(R) Segment Description Road Right High Address	VARCHAR(10)	Describes the right high address of a road segment as it relates to the Road Segment Description, assigned by the Road Data Steward.
(R) Segment Description Road Right Zip Code	VARCHAR(10)	Zip Code of address to the right of the line segment
(R) Segment Description Road Name Prefix Direction	VARCHAR(10)	N, NW, S, SW, SE, E, NE
(R) Segment Description Road Name Prefix Type	VARCHAR(15)	Used to describe the road direction if it is incorporated into the beginning of the road name. N, NW, S, SW, SE, E, NE (e.g. SW Main Street).
(R) Segment Description Road Name	VARCHAR(50)	The name of the road
(R) Segment Description Road Name Suffix Type	VARCHAR(15)	The type of roadway, as per US Postal Addressing Standards. Avenue, Street, Lane, Highway, Road etc
(R) Segment Description Road Name Suffix Direction	VARCHAR(10)	Use to describe the road direction if it is incorporated into the end of the road name. N, NW, S, SW, SE, E, NE (e.g. Main St. SW)
(R) Segment Description Road Create Date	DATE	Date assigned to the Segment Description Road that indicates the date the segment description was created in WA-Trans.
Segment Description Road Update Date	DATE	Date assigned to the Segment Description Road that indicates the segment data update date in the WA-Trans database.
Segment Description Road Validate Date	DATE	Date assigned to Transportation Segment Road Description that indicates the segment data validation date.
Segment Description Road Retire Date	DATE	Date assigned to the Segment Description Road that indicates the segment data retirement date.
(R) Segment Description Identifier	CHAR(36)	Foreign key into the Segment Description table. Identifies the general segment descriptions associated with the road segment specific description.

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Length Accuracy Measurement Method		Contains data pertaining to length accuracy and measurement method of a the segment
Length Accuracy Measurement Method Identifier	INTEGER	Surrogate Key. Sequential number auto-generated by the database upon insertion of a record. Used to uniquely identify a Length Accuracy Measurement Method record within the database.
(R) OBJECTID	INTEGER	Identifier applied by GIS Software.
(R) Length Accuracy Measurement Method Code	CHAR(3)	A 3-letter code assigned to the method of data capture
(R) Length Accuracy Measurement Method Code Description	VARCHAR(100)	Narrative description of the three character code, which describes the derivation of the Length Accuracy position and which allows the user to assess the accuracy and precision of the points x and y position. (FW-Length-Accuracy-Measurement-Method).

Status		Contains data pertaining to the current operations state: operational, retired, proposed or closed roads
Status Identifier	INTEGER	Surrogate Key. Sequential number auto-generated by the database upon insertion of a record. Used to uniquely identify a Status.
(R) OBJECTID	INTEGER	Identifier applied by GIS Software.
(R) Status Name	CHAR(25)	Name value indicating the nature of the transportation segment for use for the network. O-operational; R-retired; P-proposed; C-closed
(R) Status Description	VARCHAR (500)	Description of the Single character Status Name. O-operational; R-retired; P-proposed; C-closed

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Stakeholder		<p>Any organization that takes responsibility for proposing, designating or working in partnership with other organizations to build and maintain, or to make decisions about, the actual physical infrastructure, defining the FTRP and FTSeg, or the data being submitted to WA-Trans. The "stakeholder" may be the owner of the physical infrastructure (PI), the maintainer of the PI, or the owner, provider, maintainer or contributor of the data being submitted to WA-Trans (all of which can differ from the PI owner). The term "Stakeholder" therefore includes any organization that interacts with the WA-Trans System in any one of the following ways:</p> <p><u>Infrastructure Owner</u> - An entity or organization that owns the physical infrastructure recorded within the WA-Trans System, and makes decisions about its planning, design, construction or maintenance. The owner could also delegate planning, design, construction or maintenance responsibilities to a third party. In addition, the owner could be the entity that legally owns, and has legal authority and responsibility over, the data that is being submitted to WA-Trans (i.e. the one who has legal authority to make decisions regarding the data that represents the physical infrastructure). In this case, the owner could also be the data steward. An example of an owner might be a larger entity such as a state government agency, county or municipal/city government.</p> <p><u>Infrastructure Maintainer</u> - The entity that has the responsibility to maintain any part of the physical infrastructure for which data is recorded in the WA-Trans System. This entity may be different than the owner. An example in this case may be a State Route that passes through a city and an agreement between WSDOT and the city stipulates that the city is responsible for maintaining that portion of the State Route. In this case, WSDOT is the owner, but the city is the PI Maintainer.</p> <p><u>Data Maintainer</u> - The entity that has the legal authority to make changes, edits, updates or alterations to the data that is provided to the WA-Trans system. This could be the same as the owner or steward, but it could also be a department, group, or individual(s) to which the owner or steward has delegated data editing/creation responsibilities. The data in question could be a portion of a data set that comprises of GPS collected line segments, points or a group of data, or an entire data set that the data steward is mandated to submit based on the signed DSA. This definition can be extended to an external third party working with, and on behalf of, the owner, steward, or user (e.g. a contractor or consultant). The data maintainer could also be the entity that is responsible for providing QA/QC to the data sets plus ensuring that the metadata are current, the specifics of which will be based on the negotiated data sharing agreements between WA-Trans and the entity that has ultimate authority over the data. In short, the data maintainer is the entity that works directly with the data and in all likelihood either is, or reports to, the data steward. The data maintainer will ultimately be the "contact" that will have the most detailed knowledge about the data, and information pertaining to the data maintainer will be tracked through the metadata submitted to WA-Trans. An example of a data maintainer might be a state, county or municipal/city government's department that handles geographic services.</p> <p><u>Data Steward</u> - The entity that has legal authority to provide data, or ensure that data is provided, to the WA-Trans system. If the data steward is the same as the owner they may also have the legal authority to make all decisions pertaining to the data. The data in question could be a portion of a data set that comprises of GPS collected line segments, points or a group of data, or an entire data set that the data steward is mandated to submit based on the signed DSA. The data steward may also be the entity that is responsible for providing QA/QC to the data sets plus ensuring that the metadata are current, or delegating this responsibility to a third party (i.e. the data maintainer). The specifics of these duties will be based on the negotiated data sharing agreements between WA-Trans and the entity that has ultimate authority over the data. An example of a data steward might be a government department or person who is responsible for managing that entity's geographic data, which must be the best available source.</p> <p><u>User</u> - An organization who does not participate in the defining of FTRP and FTSeg and does not contribute data to WA-Trans but who may wish to use the WA-Trans data.</p>
Stakeholder Identifier	INTEGER	Surrogate Key. Sequential number auto-generated by the database upon insertion of a record. Used to uniquely identify a Stakeholder record within the database.
(R) OBJECTID	INTEGER	Identifier applied by GIS Software.
(R) Stakeholder Short Name	VARCHAR(6)	The standard acronym used for the organization. Example: WSDOT is the short name for Washington State Department of Transportation.
(R) Stakeholder Name	VARCHAR(60)	The actual name of the stakeholder that has decision rights over particular data.
Stakeholder Description	VARCHAR(300)	Describes who the Stakeholder is, and what the Stakeholder does
(R) Stakeholder Create Date	DATE	The date the stakeholder record was entered into the database
(R) Stakeholder Active Flag	INTEGER	Indicates if the Stakeholder is one that has current access to participate in WA-Trans. An example where a stakeholder may become inactive is a City has un-incorporated and is no longer a legal entity. This field will track such entities in the database.

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3.1.3 Event Data

Event		Narrative of events that occur along transportation segments. These events are based on a linear referencing system. Events can pertain to location regarding Federal functional class, lanes, speed limits, structures, surface types and other data placed by linear referencing system.
Event Identifier	CHAR(36)	Surrogate Key. A GUID generated by database processes upon insertion of a record. Used to uniquely identify an Event Description record within the database.
(R) OBJECTID	INTEGER	Identifier applied by GIS Software.
(R) Event Local LRS Identifier	VARCHAR(15)	Segment description local identifier.
(R) Event Full LRS Description	VARCHAR(25)	<p>The unique identifier of the LRS that assures a distinction between segments that may have the same Local Identifier; e.g. Main St.</p> <p>This field is created by concatenating the following fields together in the following way: FIPS State Code (2 characters)</p> <ul style="list-style-type: none"> StakeholderId (4 characters ONLY) ModelId (2 characters only) Local Identifier (15 characters) <p>*SPECIAL NOTE: This schema requires /assumes the following:</p> <ol style="list-style-type: none"> The Stakeholder specified WILL be the Owner of the physical infrastructure. Leading zeros will be added to any id field that is not yet 4 characters long (e.g. 1 becomes 0001, etc.) We will have no more than 3.1. 9999 Authorities or 3.2. 99 Modes <p>If we ever need to have Id's higher than these, than the entire structure of this field will have to be modified.</p>
(R*) Event Begin Milepoint	DECIMAL(6,3)	Where an event begins along a route/line segment for route / milepoint LRS.
(R*) Event End Milepoint	DECIMAL(6,3)	Where an event terminates along a route/line segment for route / milepoint LRS.
(R*) Event Begin Address	VARCHAR(10)	Begin address number that is coincident with the beginning position of the specific event; e.g. 809. For address based events.
(R*) Event Begin Full Street Name	VARCHAR(125)	Begin full street name that is coincident with the beginning position of the specific event; e.g. Capital Blvd. SW. For address based events.
(R*) Event Begin Zip Code	VARCHAR(10)	Begin zip code that is coincident with the beginning position of the specific event; e.g. 98501. For address based events.
(R*) Event End Address	VARCHAR(10)	End address number that is coincident with the ending position of the specific event; e.g. 1009. For address based events.
(R*) Event End Full Street Name	VARCHAR(125)	End full street name that is coincident with the ending position of the specific event; e.g. Capital Blvd. SW. For address based events.
(R*) Event End Zip Code	VARCHAR(10)	End zip code that is coincident with the ending position of the specific event; e.g. 98504. For address based events.
(R*) Event Begin FIPS Left City Identifier	VARCHAR(5)	Based on segment direction, this identified the City on the left side of the beginning of the event. For address based events.
(R*) Event End FIPS Left City Identifier	VARCHAR(5)	Based on segment direction, this describes the City of the left side of the end of the event. For address based events.
(R*) Event Begin FIPS Right City Identifier	VARCHAR(5)	Based on segment direction, this describes the City at the right side of the beginning of the event. For address based events.
(R*) Event End FIPS Right City Identifier	VARCHAR(5)	Based on segment direction, this describes the City at the right side of the end of the event. For address based events.
Event Begin Northing	DECIMAL(10,3)	The Y-axis of a Cartesian grid system
Event Begin Easting	DECIMAL(10,3)	The X-axis of a Cartesian grid system
Event End Northing	DECIMAL(10,3)	The Y-axis of a Cartesian grid system
Event End Easting	DECIMAL(10,3)	The X-axis of a Cartesian grid system
(R) Event Create Date	DATE	The creation date of the data pertaining to the specified event.
Event Update Date	DATE	The date the data pertaining to the specified event was last updated.

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Event Validate Date	DATE	The date that the event was validated (verified) in the database
Event Retire Date	DATE	The date that the event was retired from the database
Event Structure Local Code	VARCHAR(25)	This is the data contributors local identifier of the particular structure from the begin point to the end point.
Event Speed Limit Maximum Legal Speed	INTEGER	The legally defined maximum velocity for the section of segment between the specified "begin milepoint" and "end milepoint". Example: 55
Event Speed Limit Maximum Legal Speed Unit	VARCHAR(3)	Defines the unit of measurement used for the speed limit. MPH - Miles per hour; KPH - Kilometers per hour
Event Federal Functional Class Code	CHAR(2)	The code assigned to the Federal Functional Class
Event Federal Functional Class Road Number	INTEGER	A number assigned to a portion of a transportation mode (generally roads) by the Federal government
Event Non-motorized Width	VARCHAR(25)	The linear distance on the Non-motorized section of the transportation mode, as measured in a direction perpendicular to the direction of travel.
Event Non-motorized Traffic Level	VARCHAR(15)	A description of the level of non-motorized traffic using this segment
Event Non-motorized Dedicated Flag	BOOLEAN	Indicates whether the Non-motorized portion of the transportation mode restricts travel to ONLY Non-motorized traffic, or if it is a mixed mode transportation segment (i.e. any transportation mode may traverse section). 1 = Yes, Dedicated Non-motorized travel only; 0 = No, Mixed mode.
Event HOV Lane Occupant Requirement	INTEGER	The minimum number of occupants that are required to be in a vehicle for that vehicle to travel in the HOV lane during the designated HOV time period.
Event HOV Lane Time Restriction	VARCHAR(50)	The time periods for which the HOV lane is restricted to HOV use only.
Event HOV Lane Use Indicator	VARCHAR(25)	Designates if the HOV Lane is a dedicated HOV lane at all times, or if other types of travel are permitted.
Event HOV Lane Activation Date	DATE	The calendar date the HOV lane began operating as an HOV lane.
Event Lanes Code	CHAR(1)	A code depicting the type of lane represented by a line segment
Event Lanes Count	INTEGER	The number of lanes in the section of segment from the specified "begin milepoint" to "end milepoint".
Structure Type Identifier	INTEGER	Identifies the type of structure that is the "event". (e.g. tunnel, bridge, etc.).
Event Structure Local Name	VARCHAR(100)	The commonly used name of the structure under consideration.
Event Surface Width	DECIMAL (6,3)	Typically the width of the runway, or a paved area that is used by aircraft
Event Indian Reservation Road Indicator	VARCHAR(3)	Indicates whether this is a reservation road, Yes/No
Event Indian Reservation BIA Road Indicator	VARCHAR(3)	Indicates whether this is a BIA recognized reservation road, Yes/No
Event Indian Reservation Code	VARCHAR(3)	A BIA Code referring to the reservation and related to the Reservation Name
Event Indian Reservation Name	VARCHAR(25)	Name of reservation
Event Indian Reservation Agency Code	INTEGER	A BIA Code referring to the agency and related to the Agency Name
Event Indian Reservation Agency Name	VARCHAR(20)	Name of the Reservation Agency
Event Indian Reservation BIA Functional Classification	INTEGER	The functional Class related to the BIA road classification system.
Event Indian Reservation Federal Aid Funding Category	VARCHAR(50)	A Funding Category based on the Federal Functional Class of a particular road. The funding category indicates the percent of local matching funds required to meet the total necessary

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(R) Surface Type Identifier	INTEGER	Foreign key into the Surface Type table. Identifies the type of surface for the event.
(R) Event Type Identifier	INTEGER	Foreign key into the Event Type table. Identifies the type of event. E.g. HOV Lane, Non-Motorized lane speed limit structure, surface, etc.
(R) Event Data Steward Identifier	INTEGER	Foreign key that identifies the stakeholder who is the data steward for the event.
(R) Event Infrastructure Owner Identifier	INTEGER	Foreign key that identifies the stakeholder who owns the infrastructure represented by the event.
(R) Mode Type Identifier	INTEGER	Foreign key into the Mode Type table identifying the transportation mode for the event.
(R) Event Infrastructure Maintainer	INTEGER	Foreign key that identifies the maintainer of the physical infrastructure of the structure, i.e. bridges, tunnels, etc.
Event Average Daily Traffic Volume	INTEGER	The amount of traffic counted or calculated for a particular point, expressed and a whole number.
Event Average Daily Traffic Source	VARCHAR(50)	The Source of the traffic count represented by the Event Average Daily Traffic Volume
Event Average Daily Traffic Year	CHAR(4)	The year the Event Average Daily Traffic Volume was counted or calculated.
Event Average Daily Traffic Truck Percent	BYTE	The percent of the Event Average Daily Traffic Volume represented by trucks, expressed as a whole number.
(R) Reference Data Set Id	INTEGER	Foreign key into the Reference Data Set table.

Event Type		Designates the nature of the event; e.g. Functional Class, Speed Limit, Lane Type, Non-Motorized, Indian reservation Road, Surface Type, Structure, etc
Event Type Identifier	INTEGER	Surrogate Key. Sequential number auto-generated by the database upon insertion of a record. Used to uniquely identify an Event Type record within the database.
(R) OBJECTID	INTEGER	Identifier applied by GIS Software.
(R) Event Type Name	VARCHAR(25)	The name given to the nature of the event along a transportation mode. i.e. a change in surface type, number of lanes, speed limit, lane type (HOV, pedestrian/bicycle), classification etc.
(R) Event Type Description	VARCHAR(255)	Narrative explanation of the type of event

Surface Type		Contains information about the different categories of materials that may form the portion of the transportation mode. Examples include: asphalt, concrete, cinder, crushed gravel, etc.
Surface Type Identifier	INTEGER	Surrogate Key. Sequential number auto-generated by the database upon insertion of a record. Used to uniquely identify a Surface Type record within the database.
(R) OBJECTID	INTEGER	Identifier applied by GIS Software.
(R) Surface Type Name	CHAR(1)	Name identifying the type of surface to the Surface Type description (e.g. A = Asphalt or HMA, C = Concrete or PCCP, G = Gravel, D= Dirt or other naturally occurring surface)
(R) Surface Type Description	VARCHAR(100)	Description of the Surface Type (e.g. gravel, concrete, asphalt etc)

Structure Type		Contains information about the different categories of physical objects that may be located along a transportation mode. Examples include: Bridge, tunnel, etc.
Structure Type Identifier	INTEGER	Surrogate Key. Sequential number auto-generated by the database upon insertion of a record. Used to uniquely identify a Structure record within the database.
(R) OBJECTID	INTEGER	Identifier applied by GIS Software.
(R) Structure Type Name	VARCHAR(100)	Describes a structure found along the segment (e.g. bridge, tunnel, pedestrian overpass etc)
(R) Structure Type Description	VARCHAR(100)	Description of the Structure Type

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Mode Type	Mode type describes the nature of the segment in question. Examples include: Road, Heavy Rail, Light Rail, Ferry, Non-Motorized, Aviation and Water Port.	
Mode Type Identifier	INTEGER	Surrogate Key. Sequential number auto-generated by the database upon insertion of a record. Used to uniquely identify a Mode Type record within the database.
(R) OBJECTID	INTEGER	Identifier applied by GIS Software.
(R) Mode Type Name	VARCHAR (25)	Name commonly used to refer to a method of transportation. (e.g. Road, Heavy Rail, Light Rail, Ferry, Non-Motorized, Aviation and Water Port etc.).
(R) Mode Type Description	VARCHAR (500)	Description of the Mode Type (as noted above)

3.1.4 Railroad

Reference Point Rail		Descriptive data pertaining to discrete locations along rail lines (examples include rail stations and rail crossing information)
Reference Point Rail Identifier	CHAR(36)	Surrogate Key. A GUID generated by database processes upon insertion of a record. Used to uniquely identify a Reference Point Rail record within the database.
(R) OBJECTID	INTEGER	Identifier applied by GIS Software.
Reference Point Rail Station Name	VARCHAR(75)	The name of the rail station
Reference Point Rail Crossing Code	VARCHAR(20)	Type of crossing - over, under, at grade
Reference Point Rail Public Private Crossing Indicator	VARCHAR(7)	Type of access/ownership of crossing – Public, Private, Pedestrian
Reference Point Rail Non-Motorized Crossing Flag	BOOLEAN: Default ON Boolean	Indicate whether this is a non-Motorized rail crossing (Yes/No)
Reference Point Rail Warning Device	INTEGER	Code identifying whether there is sign, or lights or other types of devices. From the Federal Railway Administration Data
Reference Point Rail USDOT Number	VARCHAR(7)	The USDOT code for the railroad line.
Reference Point Rail Track Count	INTEGER	The number of tracks within the rail segment.
(R) Reference Point Rail Create Date	DATE	Date assigned to Reference Point that indicates the date that Reference Point data was created in the WA-Trans database.
Reference Point Rail Update Date	DATE	Date assigned to Reference Point that indicates the date that Reference Point data was updated in the WA-Trans database.
Reference Point Rail Validate Date	DATE	Date assigned to Reference Point that indicates the date that Reference Point data was validated (verified).
Reference Point Rail Retire Date	DATE	Date assigned to Reference Point that indicates the date that Reference Point data was retired in the WA-Trans database.
Reference Point Identifier	CHAR(36)	Foreign key into the Reference Point table identifying the unique Reference Point associated with the rail terminal.

Segment Description Rail		Descriptive data pertaining to rail segments (examples include the name of the rail line, operator name, track class, etc)
Segment Description Rail Identifier	CHAR(36)	Surrogate Key. A GUID generated by database processes upon insertion of a record. Used to uniquely identify a Segment Description Rail record within the database.
(R) OBJECTID	INTEGER	Identifier applied by GIS Software.
Segment Description Rail Owner Name	VARCHAR(75)	The owners name of the "line" or railroad company
Segment Description Rail Owner FRA Code	VARCHAR(3)	The Federal Railroad Administration code used to identify the rail owner.
Segment Description Rail Primary Operator Name	VARCHAR(75)	Name of the primary operator of the line.
Segment Description Rail Primary Operator FRA Code	VARCHAR(3)	The Federal Railroad Administration code used to identify the primary rail operator.

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Segment Description Rail WUTC Line Identifier	VARCHAR(10)	A code for railroad segments based upon the WA Utilities and Transportation Commission.
Segment Description Rail From Station	VARCHAR(20)	Name of origination station, generally a city or town name. Goes with WUTC Line Identifier.
Segment Description Rail To Station	VARCHAR(20)	Name of destination station, generally a city or town name. Goes with WUTC Line Identifier.
Segment Description Rail Passenger Flag	BOOLEAN	Identifies if a regularly scheduled passenger train uses the line.
Segment Description Rail Recreation Flag	BOOLEAN	Indicates whether the rail line is used for recreation. (Yes/No)
Segment Description Rail Type	VARCHAR(10)	Describes the nature of rail segment. This could be part of the mode code. Possible values include: siding, mainline, industrial spur
(R) Segment Description Rail Create Date	DATE	Date assigned to the Segment Description Rail that indicates the date the segment description was created in WA-Trans.
Segment Description Rail Update Date	DATE	Date assigned to the Segment Description Rail that indicates the segment data update date in the WA-Trans database.
Segment Description Rail Validate Date	DATE	Date assigned to Transportation Segment Rail Description that indicates the segment data validation date.
Segment Description Rail Retire Date	DATE	Date assigned to the Segment Description Rail that indicates the segment data retirement date.
(R) Segment Description Identifier	CHAR(36)	Foreign key into the Segment Description table. Identifies the segment description that is / are given for this rail segment.
(R) TrackClassID	INTEGER	Foreign key to the Track Class table. Identifies the Track Class description.

Track Class		Contains data related to the class of a rail line
TrackClassID	INTEGER	Surrogate Key. Sequential number auto-generated by the database upon insertion of a record. Used to uniquely identify a Track Class record within the database.
(R) OBJECTID	INTEGER	Identifier applied by GIS Software.
(R) Track Class Code	CHAR(1)	A 1-letter code assigned to Track Class
(R) Track Class Description	VARCHAR(200)	Narrative description of the one character code, which describes the Track Class.
Maximum Allowable Freight Speed	VARCHAR(3)	The maximum speed for a freight train allowed on this Track Class.
Maximum Allowable Passenger Speed	VARCHAR(3)	The maximum speed for a passenger train allowed on this Track Class.

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3.1.5 Aviation

Segment Description Airport		Descriptive data pertaining to airport segments (e.g. runways)
Segment Description Airport Identifier	CHAR(36)	Surrogate Key. A GUID generated by database processes upon insertion of a record. Used to uniquely identify a Segment Description Airport record within the database.

Reference Point Airport		Contains data pertaining to Airport features of the transportation mode at the specified end point. Airport(s) -- an area of land or water that is used or intended to be used for the landing and takeoff of aircraft and includes its buildings and facilities, if any. For the purpose of these instructions, the term "airport(s)" includes airports, heliports, seaplane bases, stolports (short takeoff and landing airports), gliderports, ultralight flightparks, and balloonports except where a distinction is made in the text. - From: http://www.faa.gov/ARP/publications/acs/5200-35.pdf
Reference Point Airport Identifier	CHAR(36)	Surrogate Key. A GUID generated by database processes upon insertion of a record. Used to uniquely identify a Reference Point Airport record within the database.
(R) OBJECTID	INTEGER	Identifier applied by GIS Software.
(R) Airport Identifier	VARCHAR(4)	4-character code that identifies airports
(R) Instrument Approach	BOOLEAN	Airport is either equipped, or not equipped, to handle an instrument approach
(R) ARC Code	VARCHAR(4)	Size, weight, speed and length of wings from tip to tip; (can be used to determine maximum size of aviation vehicle that can utilize airport.)
(R) Elevation	DECIMAL(6,1)	The vertical distance above or below a reference ellipsoid. For WSDOT this reference ellipsoid is designated WGS84.
(R) Elevation Unit	VARCHAR(10)	The system of measurement used for the Elevation of the airfield; e.g. feet or meters.
FAA Classification	VARCHAR(30)	Federal Aviation Administration Classification. One of the five basic airport service levels which describe the type of service that the airport is expected to provide to the community at the end of the 5-year planning period. The service levels also represent funding categories for the distribution of Federal aid. PR Commercial Service - Primary CM Commercial Service – Non-primary CR Commercial Service Airport that also serves as a reliever (included with CM in statistical summaries) - RL Reliever Airport; GA General Aviation Airport
State Classification	VARCHAR(10)	Type of airport (e.g. cargo, transport, general etc)
(R) Airport Name	VARCHAR(100)	The actual name of the airport (e.g. Sea-Tac)
(R) Control Flag	BOOLEAN	Indicates if an Airport is controlled (i.e. has a tower) or not. 1 = Controlled (yes); 0 = Uncontrolled (no)
(R) AWAS Flag	BOOLEAN	Automated Weather Advisory System. Bit flag indicating if the airport on record has this system or not. 1 = Yes; 0 = No
(R) Owner	VARCHAR(30)	The actual owner of the airport (i.e. private owner, state, county etc)
Terminal Flag	BOOLEAN	Bit flag, which indicates whether or not the airport on record has a terminal or not. 1 = Yes; 0 = No
Airport Use	VARCHAR(15)	PU = Public use. A public use airport is an airport available for use by the general public without a requirement for prior approval of the owner or operator. The owners of public use airports cannot impose operational restrictions on the use of the airport. Restrictions such as prior permission required or use at your own risk or contact the airport manager prior to landing are not permissible at public use airports. PR = Private use. A private use airport is one available for use by the owner only or by the owner and other persons authorized by the owner only. The owners of private use airports do not have to reiterate in a remark in data element 110 that the airport is private use or that prior permission is required.
(R) Reference Point Airport Create Date	DATE	Date assigned to Reference Point that indicates the date that Reference Point data was created in the WA-Trans database.
Reference Point Airport Update Date	DATE	Date assigned to Reference Point that indicates the date that Reference Point data was updated in the WA-Trans database.

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Reference Point Airport Validate Date	DATE	Date assigned to Reference Point that indicates the date that Reference Point data was validated (verified).
Reference Point Airport Retire Date	DATE	Date assigned to Reference Point that indicates the date that Reference Point data was retired in the WA-Trans database.
(R) Reference Point Identifier	CHAR(36)	Foreign key into the Reference Point table that identifies the Reference Point for the airport terminal.

3.1.6 Ferries

Reference Point Ferry		Descriptive data pertaining to ferry terminals
Reference Point Ferry Identifier	CHAR(36)	Surrogate Key. A GUID generated by database processes upon insertion of a record. Used to uniquely identify a Reference Point Ferry record within the database.
(R) OBJECTID	INTEGER	Identifier applied by GIS Software.
Reference Point Ferry Name	VARCHAR(50)	The name of the ferry terminal
(R) Reference Point Ferry Create Date	DATE	Date assigned to Reference Point that indicates the date that Reference Point data was created in the WA-Trans database.
Reference Point Ferry Update Date	DATE	Date assigned to Reference Point that indicates the date that Reference Point data was updated in the WA-Trans database.
Reference Point Ferry Validate Date	DATE	Date assigned to Reference Point that indicates the date that Reference Point data was validated (verified).
Reference Point Ferry Retire Date	DATE	Date assigned to Reference Point that indicates the date that Reference Point data was retired in the WA-Trans database.
(R) Reference Point Identifier	CHAR(36)	Foreign key into the Reference Point table identifying the ferry terminal.

Segment Description Ferry		Contains data pertaining to the Ferry transportation mode.
Segment Description Ferry Identifier	CHAR(36)	Surrogate Key. A GUID generated by database processes upon insertion of a record. Used to uniquely identify a Segment Description Ferry record within the database.
(R) OBJECTID	INTEGER	Identifier applied by GIS Software.
Segment Description Ferry Hours Not Available	VARCHAR(30)	Hours of ferry service not available.
Segment Description Ferry System-Wide Restriction	VARCHAR(30)	Descriptions of restrictions per ferry (e.g. Smoking, parking, hazardous goods etc.)
Segment Description Ferry Route Load Restriction	VARCHAR(30)	Ferry vehicle weight and height and width restrictions
Segment Description Ferry Route Length Restriction	VARCHAR(30)	Ferry vehicle length restrictions
Segment Description Ferry Route Crossing Time	DECIMAL(3,0)	The time it takes the ferry to travel the designated ferry route
(R) Segment Description Ferry Create Date	DATE	Date assigned to the Segment Description Ferry that indicates the date the segment description was created in WA-Trans.
Segment Description Ferry Update Date	DATE	Date assigned to the Segment Description Ferry that indicates the segment data update date in the WA-Trans database.
Segment Description Ferry Validate Date	DATE	Date assigned to Transportation Segment Ferry Description that indicates the segment data validation date.
Segment Description Ferry Retire Date	DATE	Date assigned to the Segment Description Ferry that indicates the segment data retirement date.
(R) Segment Description Identifier	CHAR(36)	Foreign key into the Segment Description table.

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3.1.7 Metadata

Reference Data Set		Contains data pertaining to the metadata, translation files used during upload, download and maintenance of segments, Reference Points and Event data.
Reference Data Set Id	INTEGER	Surrogate Key. Sequential number auto-generated by the database upon insertion of a record. Used to uniquely identify a Data Set, or translation record within the database.
(R) OBJECTID	INTEGER	Identifier applied by GIS Software.
(R) Data Set File Name	VARCHAR(255)	Name of the Data Set determined by data provider.
(R) Data Set Enter Date	DATE	Date dataset, metadata or translation file was entered in the database.
(R) Meta Data File Name	VARCHAR(255)	Name of the Metadata file determined by data provider.
(R) Translation File Name	VARCHAR(255)	Name of the Translation file determined by data provider.
(R) Stakeholder Identifier	Integer	Foreign key into the Stakeholder table
Projection Name	VARCHAR(75)	Name of the projection for the set of data represented by the Metadata file.
Projection File Path	NVARCHAR(300)	Location of the Projection
Reference Data Set Title	NVARCHAR(300)	Title of the Reference Data Set found in the Metadata file.
Content Begin Date	DATE	Begin date for the contents of this record.
Content End Date	DATE	End date for the contents of this record.

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4.0 Spatial Data Rules

- 1) Within a given mode, segments will be broken at public, at-grade intersections and at jurisdictional boundaries (city, county, state).
 - a. To facilitate accurate address geocoding, at-grade, non-road crossings with roadways will be identified with '2nd Order Points.' 2nd order points will also be used to identify public/private at-grade road intersections. 2nd Order Points identify special types of intersections that are important to document, but need not be used to break the roadway segment. Use of 2nd order points avoids over-segmentation of roadway segments, while allowing the possibility for entities to define agreement points at such intersections. Such a point can stand-alone and provides a means to clip a roadway segment, if needed, for a geometric network, or for use by those who include public/private intersections in their road systems.
 - b. Modes that share the roadbed - for instance a bike lane along a roadway - will be treated as a roadway event for the shared extent.
- 2) Topology/navigable network will be provided in WA-Trans through the following rules:
 - a. A reference point (segment point), is located at the begin and end of each segment, (called from and to points)
 - b. The segment direction is stored in the description table,
 - c. The relationship between segments and reference points (segment points), is manifested in the description table.
 - d. Connectivity is supported through the association of a single point (in the WA-Trans Database) with more than one segment. The point can act as both a from and to point based upon the description for each particular segment.
- 3) Roadways and railroads will always have a separate geometry (a segment can never contain information about a contiguous rail and road element). Unique segment ID methodology as per FGDC standards will be utilized.
- 4) Segments will be broken at jurisdiction boundaries (city, county, state boundaries).
- 5) A split of an existing segment will result in retirement of the original Segment ID and assignment of two new Segment IDs.
- 6) Any segment or Reference Point geometry edits, joins, or splits force an update of all associated items referenced in the Events Description Table.
- 7) Reference Point IDs will not change. If the location of a Reference Point changes, the ID is retired via the id status field and a new ID is assigned (facilitating their use as multi-modal transfer stations).
- 8) Linear features must match at jurisdictional boundaries, which will be achieved through agreement points.
- 9) Time/Date stamping shall be used to ensure proper records management, and adequate metadata. This will be handled by the database – WA-Trans submission date.
- 10) FGDC compliant metadata shall be maintained for all datasets.
- 11) Multi-modal line segments will be accommodated with the use of multiple line segments with coincident geography (i.e. stacked arcs along a congruent segment). Modes that share the roadbed - for instance a bike lane along a roadway - will be treated as a roadway event for the shared extent.
- 12) Database fields that are submitted with blank names and unnamed roads will be handled by the translator through nulls, empty strings, and blank spaces.
- 13) Spatial Accuracy will be handled by domain and metadata.
- 14) State routes, county routes, and city routes – All to be defined within their respective records
- 15) State Route (SR), Related Route Type (RRT) and Related Route Qualifier (RRQ) will be used to identify Ramps and Spurs. Such roadway features will be identified with a three character State Route Number (with leading zeroes) plus the two-character code for the Related Route Type and the 6 character Related Route Qualifier (see Appendix-A for a more detailed description)

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- 16) For each type of event (speed, HOV, etc.) there will be an event specific field required.

4.2 Rules for submission – See processed QA/QC

- Best available datasets must be topologically clean when in GIS format
- Line features should be contiguous across data set extents (i.e. where a single geographic feature is split into adjacent coverages or tiles, it should be edge-matched).
- Every feature (point, line, etc) should have one attribute record.
- Each layer of submitted data needs to have complete required attributes as designated by the required attributes described in section (3.1) above.
- Must only submit data of which you are the legal “data steward” as defined by the WA-Trans Standards documentation. This will be as determined by the Data Sharing Agreement signed between WA-Trans and the organization/entity that has legal authority and responsibility over the data that is being submitted to WA-Trans.
- All data will have metadata that will be included with data submission.
- Any authority providing Event data MUST also provide their Segment Description data for all appropriate Segments within the event.

5.0 Metadata Standards

Introduction

There are many approaches for documenting geographic data for archival purposes and day-to day use. Some methods range from informal “read me” files discussing spatial reference information, lineage, and process steps to full FGDC metadata with every field being required and populated. WAGIC established metadata standards for “significant geo-datasets” as defined in the Geographic Information Technology Standards for Metadata. This requires the collection and posting of metadata in a specific approved format for an existing or proposed “significant geo-dataset” before December 30, 2004.

Approved language

It is the policy of WA-TRANS that the completed framework dataset will include metadata that meets the requirements of the Working Subset Metadata Standard of FGDC/CSDGM. There will be fields, such as depth system definition, depth datum name, and raster object information that will not apply to the WA-TRANS, and they will be coded as “N/A” in the completed metadata document. The original metadata schema itself will not be modified to remove these fields.

Background materials

- Geographic Information Technology Standards for Metadata
- WAGIC Basic Metadata Standard
- Working Subset Metadata Standard of FGDC/CSDGM

Intent

- Geographic data must be properly documented for it to be stored and retrieved without a loss of information.
- WA-TRANS is a very significant geo-dataset that requires proper and as complete documentation as possible.

Definitions:

- **Metadata** - "data about data" or "information describing content."
- **WAGIC** - Washington State Geographic Information Council
- **FGDC** - Federal Geographic Data Committee

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Detailed research for proposed language:

I. [Geographic Information Technology Standards for Metadata](#)

“To facilitate implementation of this standard the WAGIC Basic and Working subsets of the FGDC Content Standard for Digital Geospatial Metadata are recognized as an approved implementation pathway.”

II. [WAGIC Basic Metadata Standard](#)

This is the minimum required documentation to meet the Geographic Information Technology Standard for metadata before December 30, 2004.

III. [Working Subset Metadata Standard](#) of FGDC / CSDGM.

The Working Subset includes a Basic Subset plus following shaded elements. This is the minimum required documentation to meet the Geographic Information Technology Standard for metadata after 30 Dec, 2004.

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5.1 WAGIC Basic Metadata Standard

Element Title

Element Purpose

Minimum Requirements

ISB / WAGIC - Basic Metadata Subset From FGDC Content Standard for Digital Geospatial Metadata <i>Basic Subset - shaded areas identify actual data entry elements</i>				
	Element Name	Element Definition	FGDC Hierarchy	sgml tag name
	Identification Information	Basic information about the data set.	1	idinfo
1	Title	The name by which the data set is known	8.4	title
2	Publisher	Name of individual or organization that published the data set	8.8.2	publish
	Description	A characterization of the data set, including its intended use and limitations.	1.2	descript
3	Abstract	A brief narrative summary of the data set. Domain: free text.	1.2.1	abstract
4	Purpose	A summary of the intentions with which the data set was developed. Domain: free text	1.2.2	purpose
	Time Period of Content	Time period(s) for which the data set corresponds to the ground.	1.3	timeperd
	Range of Dates / Times	Means of encoding a range of dates and times.	9.3	rngdates
5	Beginning Date	The first year (and optionally month, or month and day) of the event. Domain: "Unknown" free date	9.3.1	begdate
6	Ending Date	The last year (and optionally month, or month and day) for the event. Domain: "Unknown" "Present" free date	9.3.3	enddate
7	Currentness Reference	The basis on which the time period of content is determined. Domain: "Ground Condition" "Publication Date" free text	1.3.1	current
	Keywords	Words or phrases summarizing an aspect of the data set.	1.6	keywords
	Theme	Subjects covered by the data set	1.6.1	theme
8	Theme Keyword	Common-use word or phrase used to describe the subject of the data set. Domain: free text	1.6.1.2	themekey
	Place	Geographic locations characterized by the data set.	1.6.2	place
9	Place Keyword	The geographic name of a location covered by a data set. Domain: free text	1.6.2.2	placekey
	Data Quality Information	A general assessment of the quality of the data set.	2	dataqual
	Lineage	Information about the events, parameters, and source data, which constructed the data set, and information about the responsible parties.	2.5	lineage
10	Source Information	List of sources and short discussion of the information contributed by each.	2.5.1	srcinfo
11	Source Time Period of Content	Time period(s) for which the source data set corresponds to the ground. Information about the date and time of an event.	2.5.1.4	srctime
	Range of Dates / Times	Means of encoding a range of dates and times.	9.3	rngdates
12	Beginning Date	The first year (an optionally month, or month and day) of the event. Domain: "Unknown" free date	9.3.1	begdate
13	Ending Date	The last year (and optionally month, or month and day) for the event. Domain: "Unknown" "Present" free date	9.3.3	enddate
	Entity and Attribute Information	Information about the content of the data set, including the entities types, their attributes, and the domains from which attribute values may be assigned.	5	eainfo
14	Overview Description	Summary of, and citation to detailed description of, the information content of the data set.	5.2	overview
15	Entity/Attribute Overview	Detailed Summary of the information contained in a data set. Domain: free text	5.2.1	eaover
	Point of Contact / Contact Information	Contact information for an individual or organization that is knowledgeable about the data set. Identity of, and means to communicate with, person(s) and organization(s) associated with the dataset.	10	ptcontac
16	Contact Person	The name of the individual to which the contact type applies. Domain: free text	10.1.1	cntper
17	Contact Organization	The name of the organization to which the contact type applies. Domain: free text	10.1.2	cntorg
18	Contact Position	The title of the individual. Domain: free text	10.3	cntpos
19	Contact Address	The address for the organization or individual.	10.4	cntaddr
20	Address Type	The information provided by the address. Domain: "Mailing Address" "Physical Address" "Mailing and Physical Address"	10.4.1	addrtype
21	Address	An address line for the address. Domain: free text	10.4.2	address
22	City	The city of the address. Domain: free text	10.4.3	city
23	State or Province	The state or province of the address. Domain: free text	10.4.4	state
24	Postal Code	The ZIP or other postal code of the address. Domain: free text	10.4.5	postal
25	Contact Voice Telephone	The telephone number by which individuals can speak to the organization or the individual. Domain: free text	10.5	cntvoice
26	Contact FAX Telephone	The telephone number of a FAX machine of the organization or individual. Domain: free text	10.7	cntfax
27	Contact E-Mail Address	The address of the electronic mailbox of the organization or individual. Domain: free text	10.8	cntemail

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5.2 Working Subset Metadata Standard

Information Service Board Metadata Standard – Appendix A
Approved Working Level Subset of FGDC/CSDGM
(February 6th 2003)

Element Title

Element Purpose

Minimum Requirements

Working Subset includes Basic Subset plus following shaded elements

Element Name	Element Definition	FGDC Hierarchy
Status	The state and maintenance of information for the data set.	1.4
Progress	The state of the data set. Domain: "Complete" "In Work" "Planned"	1.4.1
Maintenance and Update Frequency	The frequency with which changes and additions are made to the data set after the initial data set is completed. Domain: "Continually" "Daily" "Weekly" "Monthly" "Annually" "Unknown" "As Needed" "Irregular" "None Planned" free text	1.4.2
Spatial Domain	The geographic areal domain of the data set.	1.5
Bounding Coordinates	The limits of coverage of a data set expressed by latitude and longitude values in the order western-most, eastern-most, northern-most, and southern-most. For data sets that include a complete band of latitude around the earth, the West Bounding Coordinate	1.5.1
West Bounding Coordinate	Western-most coordinate of the limit of coverage expressed in longitude. Domain: -180.0 <= West Bounding Coordinate < 180.0	1.5.1.1
East Bounding Coordinate	Eastern-most coordinate of the limit of coverage expressed in longitude. Domain: -180.0 <= East Bounding Coordinate < 180.0	1.5.1.2
North Bounding Coordinate	Northern-most coordinate of the limit of coverage expressed in latitude. Domain: -90.0 <= North Bounding Coordinate <= 90.0; North Bounding Coordinate >= South Bounding Coordinate	1.5.1.3
South Bounding Coordinate	Southern-most coordinate of the limit of coverage expressed in latitude. Domain: -90.0 <= South Bounding Coordinate <= 90.0; South Bounding Coordinate <= North Bounding Coordinate	1.5.1.4
Theme Keyword Thesaurus	Reference to a formally registered thesaurus or a similar authoritative source of theme keywords. Domain: "None" free text	1.6.1.1
Place Keyword Thesaurus	Reference to a formally registered thesaurus or a similar authoritative source of place keywords. Domain: "None" "Geographic Names Information System" free text	1.6.2.1
Access Constraints	Restrictions and legal prerequisites for accessing the data set. These include any access constraints applied to assure the protection of privacy or intellectual property, and any special restrictions or limitations on obtaining the data. Domain: "None"	1.7
Use Constraints	Restrictions and legal prerequisites for using the data set after access are granted. These include any access constraints applied to assure the protection of privacy or intellectual property, and any special restrictions or limitations on obtaining the data	1.8
Attribute Accuracy	An assessment of the accuracy of the identification of entities and assignment of attribute values in a data set.	2.1
Attribute Accuracy Report	An explanation of the accuracy of the identification of the entities and assignments of values in the data set and a description of the texts used. Domain: free text	2.1.1
Positional Accuracy	An assessment of the accuracy of the positions of spatial objects.	2.4
Horizontal Positional Accuracy	An estimate of accuracy of the horizontal positions of the spatial objects.	2.4.1
Horizontal Positional Accuracy Report	An explanation of the accuracy of the horizontal coordinate measurements and a description of the tests used. Domain: free text	2.4.1.1
Vertical Positional Accuracy	An estimate of accuracy of the vertical positions in the data set.	2.4.2
Vertical Positional Accuracy Report	An explanation of the accuracy of the vertical coordinate measurements and a description of the tests used. Domain: free text	2.4.2.1
Source Scale Denominator	The denominator of the representative fraction on a map (for example, on a 1:24,000-scale map, the Source Scale Denominator is 24,000. Domain: Source Scale Denominator > 1	2.5.1.2
Source Contribution	Brief explanation identifying the information contributed by the source to the data set. Domain: free text	2.5.1.6
Spatial Data Organization Information	The mechanism used to represent spatial information in the data set.	3
Direct Spatial Reference Method	The system of objects used to represent space in the data set. Domain: "Point" "Vector" "Raster"	3.2
Raster Object Information	The types and numbers of raster spatial objects in the data set.	3.4 – Not Applicable
Raster Object Type	Raster spatial objects used to locate zero-, one-, and two-, and three-dimensional locations in the data set. Domain: "Point" "Pixel" "Grid Cell" "Voxel"	Not Applicable - 3.4.1
Spatial Reference Information	The description of the reference frame for, and the means to encode, coordinates in the data set.	4
Horizontal Coordinate System Definition	The reference frame or system from which linear or angular quantities are measured and assigned to the position that a point occupies.	4.1
Planar	The quantities of distances or, or distances and angles, which define the position of a point on a reference plane to which the surface of the Earth has been projected.	4.1.2

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Working Subset includes Basic Subset plus following shaded elements – continued

	Element Name	Element Definition	FGDC Hierarchy
	Grid Coordinate System	A plane-rectangular coordinate system usually based on, and mathematically adjusted to, a map projection so that geographic positions can be readily transformed to and from plane coordinates.	4.1.2.2
	Grid Coordinate System Name	Name of the grid coordinate system. Domain: A code table	4.1.2.2.1
	State Plane Coordinate System (SPSC)	A plane-rectangular coordinate system established for each state in the United States by the National Geodetic Survey.	4.1.2.2.4
	SPCS Zone Identifier	Identifier for the SPCS zone. Domain: Four-digit numeric code for the State Plane Coordinate Systems based on the North American Datum of 1983 are found in Department of Commerce, 1986, Representation of geographic point locations for information interchange	4.1.2.2.4.1
	Planar Coordinate Information	Information about coordinate system	4.1.2.4
	Planar Distance Units	Units of measure used for distance	4.1.2.4.4
	Geodetic Model	Parameters for the shape of the Earth.	4.1.4
	Horizontal Datum Name	The identification given to the reference system used for defining the coordinates of points. Domain: "North American Datum of 1927" "North American Datum of 1983" free text	4.1.4.1
	Ellipsoid Name	Identification given to established representations of the Earth's shape.	4.1.4.2
	Semi-major Axis	Radius of the equatorial axis of the ellipsoid	4.1.4.3
	Denominator of Flattening Ratio	The denominator of the ratio of the difference between the equatorial and polar radii of the ellipsoid when numerator is set to 1.	4.1.4.4
	Vertical Coordinate System Definition	The reference frame or system from which vertical distances (altitudes or depths) are measured	4.2
	Altitude System Definition	The reference frame or system from which altitudes (elevations) are measured. The term "altitude" is used instead of the common term "elevation" to conform to the terminology in Federal Information Processing Standards 70-1 and 173	4.2.1
	Altitude Datum Name	The identification given to the surface taken as the surface of the reference frame from which altitude is measured	4.2.1.1
	Depth System Definition	The reference frame of system from which depths are measured	4.2.2 – Not Applicable
	Depth Datum Name	The identification given to surface of reference from which depths are measured	Not Applicable - 4.2.2.1
	Detailed Description	Description of the entities, attributes, attribute values, and related characteristics encoded in the data set.	5.1
	Entity Type	The definition and description of a set into which similar entity instances are classified.	5.1.1
	Entity Type Label	The name of the entity type. Domain: free text	5.1.1.1
	Entity Type Definition	The name of the entity type. Domain: free text	5.1.1.2
	Attribute	A define characteristic of an entity.	5.1.2
	Attribute Label	The name of the attribute. Domain: free text	5.1.2.1
	Attribute Definition	The description of the attribute. Domain: free text	5.1.2.2
	Attribute Domain Value	The valid values that can be assigned for an attribute.	5.1.2.4
	Enumerated Domain	The members of an established set of valid values.	5.1.2.4.1
	Enumerated Domain Value	The name or label of a member of the set. Domain: free text	5.1.2.4.1.1
	Enumerated Domain Value Definition	The description of the value. Domain: free text	5.1.2.4.1.2
	Range Domain	The minimum and maximum values of a continuum of valid values.	5.1.2.4.2
	Range Domain Minimum	The least value that the attribute can be assigned. Domain: free text	5.1.2.4.2.1
	Range Domain Maximum	The greatest value that the attribute can be assigned. Domain: free text	5.1.2.4.2.2
	Codeset Domain	Reference to a standard or list that contains the members of an established set of valid values.	5.1.2.4.3
	Codeset Name	The title of the codeset. Domain: free text	5.1.2.4.3.1
	Codeset Source	The authority for the codeset. Domain: free text	5.1.2.4.3.2
	Attribute Units of Measurement	The standard of measurement for an attribute value. Domain: free text	5.1.2.5
	Attribute Measurement Resolution	The smallest unit increment to which an attribute value is measured. Domain: Attribute Measurement Resolution > 0.0	5.1.2.6
	Citation Information	The recommended reference to be used for the data set.	8
	Originator	The name of organization or individual that developed data set.	8.1
	Publication Date	Date dataset published	8.2
	Title	The recommended name of dataset	8.4

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6.0 Data Quality

6.1 Quality Assurance and Quality Control (Phase II)

Quality assurance and quality control (QA/QC) are the processes and tools, which establish and enforce data consistency and data accuracy. In an environment where data is being integrated from multiple sources, it is a critical function. Software can be built to enforce QA/QC in the following categories:

- Topological – checks regarding connectivity of the line work at intersections, overpasses and bridges represented as separate features, segments meeting at jurisdictional boundaries, etc.
- Scale/Spatial – Does the location accuracy meet the planned business use of the data; does the “aesthetic” representation of the transportation feature meet the business requirements?
- Attribute – Are the minimum required fields included, are the field descriptions met, how many of the attributes are populated, are the attribute values valid?
- Metadata – Concerns regarding metadata include: has the required metadata been provided, is it complete, and does it conform to established metadata standards; does the metadata match the layer?

All of these are standard GIS requirements for checking data and when the environment is one of handling data from a variety of sources, it is critical that they be supported with software tools to facilitate efficient checking and validation.

6.2 Data Scale (Expressed targets)

This will be a multi-scale dataset			
Urban	1:1,200	1:6,000	1:24,000
Rural	1:6,000	1:24,000	1:48,000
Remote	1:24,000	1:48,000	1:100,000

6.3 Data Accuracy (Expressed targets)

	Urban			Rural			Remote (Agriculture / Forestry)		
	High	Medium	Low	High	Medium	Low	High	Medium	Low
Spatial Accuracy	1 ft.	5 ft.	40 ft	5 ft	40 ft	50 ft	40 ft.	50 ft.	100 ft.
Update Frequency	1 month	6 months	1 year	1 year	2 years	3 years	1 year	2 years	5 years
Attribute Completeness	95%	80%	70%	95%	80%	70%	N/A	N/A	N/A
Source Scale	1:1,200	1:6,000	1:24 K	1:6,000	1:24 K	1:48 K	1:24 K	1:48 k	1:100 K

6.4 Coordinate System Standards

In support of the above objectives Washington State adopts the following technical standards related to Datum and Coordinate Systems for significant geo-datasets. This standard is intended to apply to existing and new 'significant' agency geo-datasets

Datum:

North American Datum 1983 (1991 adjustment) as defined by the National Geodetic Survey. (Also referred to as: NAD83/91)

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Coordinate System:

The standard coordinate system shall be the Washington Coordinate System of 1983 alternately; the Geographic Coordinate System may be used.

Washington Coordinate System of 1983

- The system of plane coordinates established by the National Geodetic Survey for defining and stating the positions or locations of points on the surface of the earth within the state of Washington is referred to as the Washington Coordinate System of 1983.
- The coordinate system standard for significant geo-dataset is Washington Coordinate System of 1983 (WCS 83) zone appropriate for geo-datasets that are maintained within the WCS 83 North zone or, WCS 83 South zone.
- The standard is Washington Coordinate System of 1983 South zone if the geo-dataset is maintained as a statewide layer or, a regional layer crossing zones.
- Standard unit of measure is US Survey Foot. For agencies that must maintain unit of measure in meters, the standard conversion of coordinates between the meter and the US survey foot shall be based upon the length of the meter being equal to exactly 39.37 inches.

Geographic Coordinate System

- Alternately, geospatial data may be stored in geographic coordinates on the North American Datum of 1983/91, in decimal degrees with negative West longitudes and positive North latitudes.
- Geographic coordinates (latitude & longitude values) on a geo-centric datum comprise a reference system for measuring Earth locations. This system provides a continuous, consistent reference framework for locating features anywhere in the state and beyond. The system is readily compatible with global positioning system data and is the reference system intended for Washington State Geospatial Framework data.

7.0 Stewardship

7.1 Update Cycles

- Need decisions on best available data for each data layer and/or scale.
- Here data could be submitted to source agency when concatenating with tabular or spatial data. If this is acceptable this will reduce the need to concatenate data repeatedly with each update cycle.
- Also will need to define a regular update cycle for data. Many agencies have an annual update cycle based on budget cycle. Would this dictate framework update cycle? Yearly updates, quarterly?

8.0 Data Layers

8.1 Core Data Sets:

- Federal
- State Highway System
- Highway Ramps – WSDOT naming convention
- Rest Areas
- Weigh Stations
- Local Roads
- Railroads
- Ferry Transit Routes – include ferry terminal locations, includes staging areas as segments and connector roads
- Airports – includes airport locations, connector roads and runway segments

8.2 Event Datasets

- Scenic Highways – attribute (Not yet modeled)
- Tribal Road Designators
- Non-Motorized Transportation Modes
- Port Facilities – attribute (Not yet modeled)
- Bridges – attribute (Not yet modeled)
- Park and Rides – attribute (Not yet modeled)

8.2 Reference (Boundary) Datasets:

- County Boundaries
- Reservation Boundaries
- Urbanized Areas

8.4 Supporting Datasets:

- CRIS Data – Core attribution
- Survey Data – Core attribution
- Bridges, culverts – attribute (event), eventually end points for bridges

8.5 Interfaces

- Mobility
- Geospatial One-stop

9.0 References

- All Roads (HARP), ODT, Watterson and Brady, 2003 v5 draft
- ANSIT, Geographic Information Framework-Data Content Standards for Transportation Networks: Roads
- Oregon Road Centerline Standard, ODT, V.2, 2003 draft
- Michigan Framework – web
 - http://www.michigan.gov/cgi/0,1607,7-158-12759_14194---,00.html
- Arizona Framework – web
- Dueker white paper
- King Co Standards
 - http://www.metrogis.org/data/standards/address_guidelines.shtml
- Minnesota Data Standards
 - <http://www.co.clay.mn.us/Depts/GIS/GISDStan.htm>
- [1] WAGIC Metadata
 - http://wagic.wa.gov/techstds2/wl_subsetv1.htm
- Geospatial One Stop
 - <http://www.geo-one-stop.gov/Standards/Base/index.html>

APPENDIX – A

Related Route Type (RRT)

Before TRIPS, the SR number represented the main traveled way of our highways. This left out other pieces of our highways like Ramps, Spurs, Couplets, etc. and in numerous cases, caused location data to be inaccurate.

With TRIPS came RRT and RRQ. Together with the SR number, these descriptors identify very precisely any piece of the highway system in the State.

RRT = A two character abbreviation for a type of roadway. The following is a list of RRTs in the system.

AR	Alternate Route	CD	Collector Distributor Dec
CO	Couplet	CI	Collector Distributor Inc
FD	Frontage Road Dec	LX	Crossroad within Interchange
FI	Frontage Road Inc	P1 - P9	Off Ramp, Inc
FS	Ferry Ship (Boat)	PU	Extension of P ramp
FT	Ferry Terminal	Q1 - Q9	On Ramp, Inc
PR	Proposed Route	QU	Extension of Q ramp
RL	Reversible Lane	R1 - R9	Off Ramp, Dec
SP	Spur	RU	Extension of R ramp
TB	Transitional Turnback	S1 - S9	On Ramp, Dec
TR	Temporary Route	SU	Extension of S ramp

Related Route Qualifier (RRQ)

The RRQ is a six-digit field that uniquely identifies the RRT since there may be more than one of the same type of RRT for a route. The assigning of RRQ is done in one of three ways depending on the RRT.

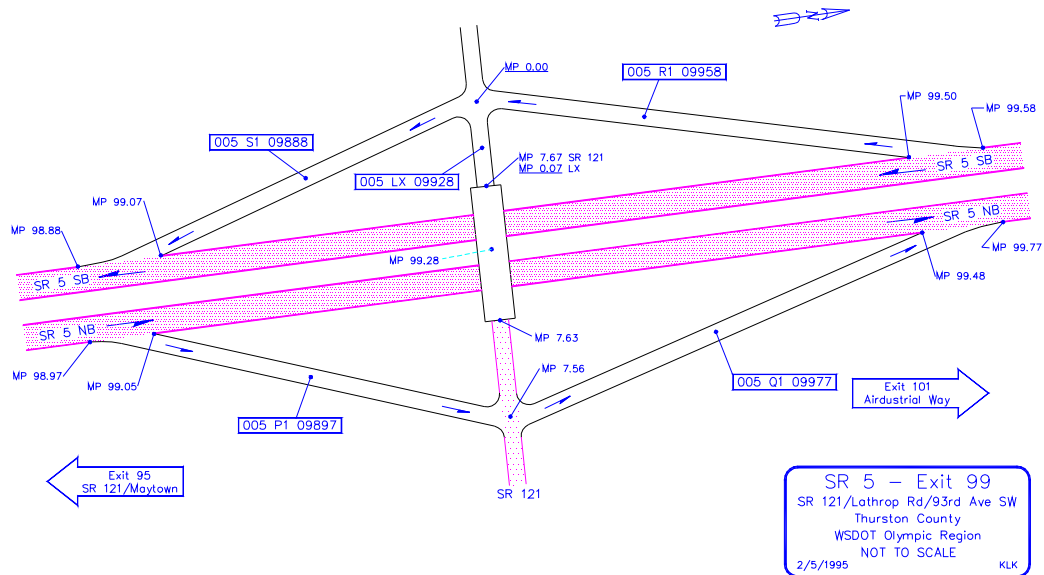
(2) The following RRTs use the Mainline SRMP where the RRT attaches to the Mainline. The begin SRMP for that RRT will be 0.000.

CD	Collector Distributor Dec	P1 - P9	Off Ramp, Inc
CI	Collector Distributor Inc	PU	Extension of P ramp
FD	Frontage Road Dec	Q1 - Q9	On Ramp, Inc
FI	Frontage Road Inc	QU	Extension of Q ramp
LX	Crossroad within Interchange	R1 - R9	Off Ramp, Dec
RL	Reversible Lane **	RU	Extension of R ramp
		S1 - S9	On Ramp, Dec
		SU	Extension of S ramp

** At this time, this RRT does not follow standard naming convention

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DIAMOND INTERCHANGE EXAMPLE

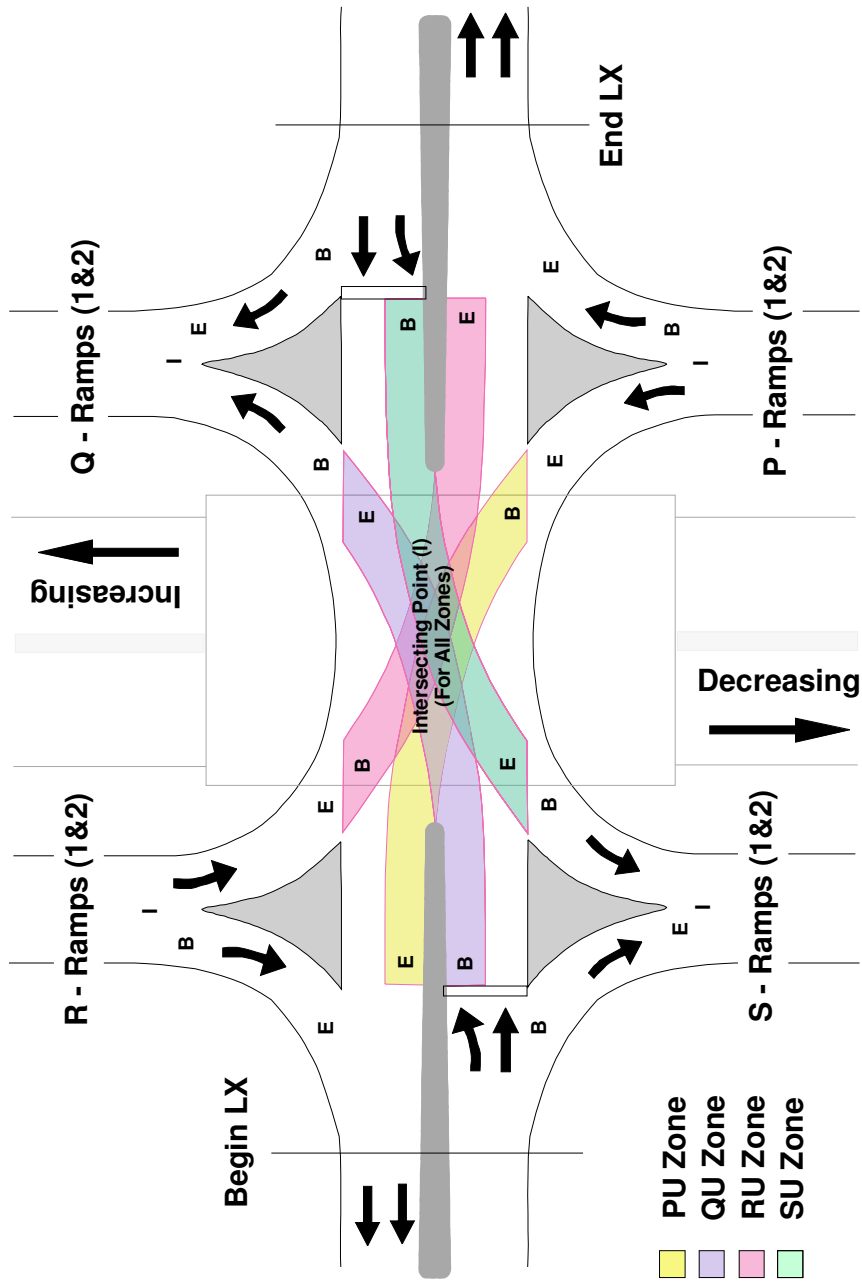


EXAMPLE: 005 R1 09958

Where:

005	=	SR Number
R1	=	RRT for decreasing MP direction off-ramp (R ramp)
09958	=	Mainline SRMP at beginning of the R ramp where the R ramp leaves the mainline

TYPICAL SINGLE POINT (URBAN) INTERCHANGE CONFIGURATION



EXAMPLE: 101 RU 36542

Where: 005 = SR Number
RU = RRT for extension of R ramp to LX tangent
36542 = Mainline SRMP at beginning of the R ramp where the R ramp leaves the mainline

APPENDIX – B

This section contains data, data standards, or possible data issues that have not been formalized, approved, or researched. Some or all of the items in this section may never be approved, but are included so that the ideas do not get lost until formally reviewed. There will be two sections, where data issues will be documented, the “Park and Ride” and the “Dry Dock”.

Items in “Park and Ride” are on the front burner and will be researched and formalized for review and likely be placed in the standards as soon as an adequate review has occurred.

Items in the “Dry Dock” have been identified as possible data, but have not been identified as being needed for WA-Trans, or have not had the researched necessary to indicate enough value to be placed in the “Park and Ride”. An example would be the attributes used by Federal Railroad Administration (FRA) in their record keeping, but not identified as necessary by WA-Trans partners.

Although it is possible that data issues in these two sections will never be used in WA-Trans, it is considered important that this data not be lost while waiting for a final determination.

Park and Ride

Retire Segments/Points

The Business Rules related to retiring a segment have not been defined. The Retire Date has a definition, but the process involved in retiring a segment or Reference Point has not been defined.

Date attributes in some tables.

All entities need to be checked and a determination made as to whether date attributes need to be added. Date attributes do need to be added to addressing. In some cases the lack of dates may be due to the entity research not being complete.

Freight and Goods

Freight and Goods data has been identified as necessary for WA-Trans. The basic Freight and Goods designations can be added and identified with each segment without much effort, but there is more data and the scope of Freight and Goods data in WA-Trans has not been determined.

The basic Freight and Goods tonnage designations:

T-1: more than 10 million tons per year

T-2: 4 million to 10 million tons per year

T-3: 300,000 to 4 million tons per year

T-4: 100,000 to 300,000 tons per year

T-5: at least 20,000 tons in 60 days

The designations are determined by one of three calculations. One of the calculations can be used with only basic ADT data (ADT and percentage of trucks). ADT data will be included in WA-Trans and information on ADT is included in this appendix.

ADT (Average Daily Traffic)

The average daily traffic is considered essential data for WA-Trans users. Where and how much of this data will be included in WA-Trans has not been determined at this time. The basic minimum data that will likely be included will be:

- ADT (Average Daily Traffic) – Number of cars and trucks counted at a given point, or interpolated for a point expressed as an integer. Whether this data is applied to Reference Points, Segments or both has not been determined.
- Percent of Trucks – Percentage of ADT that has been counted as truck traffic, expressed as an integer.

Adding ADT data in a manner where it can be used for Freight and Goods calculations has not been explored. This relationship may not be considered important.

Required Entities

Many of the attributes in WA-Trans will be required. There will be two data stores for WA-Trans, the Working Storage where data is being translated and manipulated, and the final storage the WA-Trans tabular database. Each data storage will need to have a slightly different structure and many of the attributes, which will need to have a data value other than NULL, will eventually get this value in various ways during the various processes needed to update WA-Trans with provider data.

The decision to make an attribute required in the WA-Trans database is based on the phrase “Does WA-Trans want this entity to have a value other than NULL?”. If the answer is yes then how is this data going to be obtained? It is recognized that some data providers may not have some of the data, or even collect data WA-Trans considers important. There will then need to be processes to assist the user or software/backend processes to calculate or add a default value to a required field.

WA-Trans is currently creating a document indicating which attributes will be required. The data being documented includes:

- Entity Name,
- Attribute Name,
- Is it required in Working Storage,
- Is it required in the WA-Trans database,
- Notes on how a value may be obtained through WA-Trans processes (e.g. software interface prompts, calculations, Geo-processing calculations, back end processing in the database)

During the determination of required attributes it will also be necessary to determine relationships between attributes.

It is understood that many data attributes and their character will likely change as research continues. It is also considered important that those attributes, identified as needing to be required, have the required attribute initiated as we progress and learn instead of being initiated across the board at the beginning.

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Functional Classification Crosswalk

There are several different flavors of Transportation Classification Systems used by various organizations.

- The Bureau of Indian Affairs (BIA),
- USGS (particularly related to The National Map),
- Census (they have two, one old and being phased out being replaced by another),
- Federal Functional Class (USDOT).

The Federal Functional Class is the one considered the most important and we would like to be able to obtain this from any other given functional class. To this end a Functional Class Crosswalk has been proposed. The table below is a draft of a functional Class Crosswalk.

NOTE: There will need to be adjustments to some of the items.

Fed_Func_Cls_Surr_Key	Fed_Func_Cls_Descr	Fed_Func_Cls_Cd	St_Func_Cls_Cd	USGS	BIA	CFCC (Census)	MTFCC (Census)
1	Rural-Interstate	1	R5	Class 1	Class 2	A1-A18, A21-A28	S1100
2	Rural-Principal-Arterial	2	R1	Class 1	Class 2	A21-A28, A31-A38	S1100
3	Rural-Minor-Arterial	6	R2	Class 1	Class 2	A31-A38	S1200
4	Rural-Major-Collector	7	R3	Class 1	Class 2	A31-A38	S1200
5	Rural-Unclassified	9	R4	Class 2	Class 3	A41-A48	S1400
6	Urban-Interstate	11	U5	Class 1	NA	A1-A18, A21-A28	S1100
7	Urban-Principal-Arterial	12	U1	Class 1	NA	A21-A28, A31-A38	S1100
8	Urban-Other-Principal-Arterial	14	U1	Class 1	NA	A31-A38	S1100
9	Urban-Minor-Arterial	16	U2	Class 1	NA	A21-A28, A31-A38	S1200
10	Urban-Collector	17	U3	Class 1	NA	A41-A48	S1200
11	Urban-Unclassified	19	U4	Class 2	NA	A41-A48, A51-A53, A60-A65, A70-A74	S1400
12	Rural-Minor-Collector	8	NULL	Class 2	Class 4	A41-A48, A51-A53, A60-A65, A70-A74	S1400
	NA	NA	NA	Class 3	Class 4	A41-A48, A51-A53, A60-A65, A70-A74	S1200, S1400
	NA	NA	NA	Class 4	Class 3	A71-A74	S1400, S1500, S1500, S1710, S1730, S1740, S1750,
	NA	NA	NA	Class 5	Class 5	A71-A74	S1780, S1820, S1830

Possible Domains

Entities where Domains have not been fleshed out yet include:

- Reference Point Type
- Mode Type
- Structure Type
- Surface Type
- Functional Class
- Segment Status Type
- Object Code
- Status
- Event Type
- Track Class

City Identifiers FIPS vs County

WA-Trans stores the FIPS City identifiers related to segment descriptions and reference points. The source of the city identifiers are from the data providers files that will be translated to WA-Trans. A problem is encountered during translation with FIPS city identifiers due to the fact that some counties maintain their own city identifier within their data, which works very well for their purposes, but is not a FIPS Identifier.

It is clear there needs to be some process to convert the provided city identifiers to FIPS City identifiers. Crosswalk processes have been proposed. A basic requirement a crosswalk process will need to follow will be down one of two avenues.

1. The conversion to FIPS City identifier from the provided City Identifier must work going into WA-Trans and also during translation back out.
2. The conversion to FIPS City identifier need only work during translation into WA-Trans.

Option 1

This will require there be some process to convert the provided city identifier to a FIPS identifier and then to again refer to that process while supplying data for a user request.

Pros:

1. This process will maintain the city identifier, originally used within the specific counties application to identify a city, for any user accessing WA-Trans.

Cons:

- A. A crosswalk will have to be maintained in WA-Trans independently of the data provider process. This could involve provider maintenance in addition to the periodic WA-Trans data updates.
- B. A crosswalk will have to be maintained for every provider submitting data. This will at least include every county in the state.
- C. The original provider city identifier will have little significance to the user without a description file and even then will be of less universal use than a FIPS City identifier.
- D. If a data user was given a choice of receiving the original City ID or FIPS ID it would involve additional application development. This would also involve explaining the necessity of making that choice, pros and cons.

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- E. Developing application process for a data user will be quite extensive to take into account the possibility of multiple provider crosswalk data being accessed for a single data request.

Implementation:

This process could be implemented in two ways.

- One could be at the translation level alone with a file (e.g. a .csvs (Excel), or XML) file sitting at a known location being reference during translation processes.
- Second could be tables within WA-Trans that are referenced during translation processes.

Each implementation will require maintenance with the second one involving database processes as well as data maintenance. Application maintenance will also be involved with processes for a data user requests in addition to the initial translation to WA-Trans.

Option 2

This will require there be some process to convert the provided city identifier to a FIPS City identifier.

Pros:

1. This process will only need to be maintained for initial translation into WA-Trans and not during any other data processes.
2. With good design it may be possible to create the process to download the original city identifier at a later date.

Cons:

- A. A crosswalk will have to be maintained in WA-Trans independently of the data provider process. This could involve provider maintenance in addition to the periodic WA-Trans data updates.
- B. A crosswalk will have to be maintained for every provider submitting data. This will at least include every county in the state.
- C. The original City identifier will be lost during the translation process and not available during user download.

Implementation:

This process could be implemented in two ways.

- One could be at the translation level alone with a file (e.g. a .csvs (Excel), or XML) file sitting at a known location being reference during translation processes.
- Second could be tables within WA-Trans that are referenced during translation processes.

Each implementation will require maintenance with the second one involving database processes as well as data maintenance.

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FIPS-City Identifier Crosswalk

Below is a proposed Crosswalk for use as a database table or a data file. This crosswalk only includes King and Pierce County City Codes.

County	City/Town	WSDOT County #	FIPS City	OFM Long City	FIPS County	Local City Identifier
King	Algona	17	01290	5301290WA	033	AL
King	Auburn (pt)	17	03180	5303180WA	033	AU
King	Beaux Arts Village	17	04895	5304895WA	033	BA
King	Bellevue	17	05210	5305210WA	033	BE
King	Black Diamond	17	06330	5306330WA	033	BD
King	Bothell (pt)	17	07380	5307380WA	033	BO
King	Burien	17	08850	5308850WA	033	BU
King	Carnation	17	10215	5310215WA	033	CA
King	Clyde Hill	17	13365	5313365WA	033	CH
King	Covington	17	15290	5315290WA	033	CO
King	Des Moines	17	17635	5317635WA	033	DM
King	Duvall	17	19035	5319035WA	033	DU
King	Enumclaw	17	22045	5322045WA	033	EN
King	Federal Way	17	23515	5323515WA	033	FW
King	Hunts Point	17	32755	5332755WA	033	HP
King	Issaquah	17	33805	5333805WA	033	IS
King	Kenmore	17	35170	5335170WA	033	KM
King	Kent	17	35415	5335415WA	033	KE
King	Kirkland	17	35940	5335940WA	033	KI
King	Lake Forest Park	17	37270	5337270WA	033	LF
King	Maple Valley	17	43150	5343150WA	033	MV
King	Medina	17	44725	5344725WA	033	ME
King	Mercer Island	17	45005	5345005WA	033	MI
King	Milton (pt)	17	46020	5346020WA	033	MT
King	Newcastle	17	48645	5348645WA	033	NE
King	Normandy Park	17	49415	5349415WA	033	NP
King	North Bend	17	49485	5349485WA	033	NB
King	Pacific (pt)	17	52495	5352495WA	033	PA
King	Redmond	17	57535	5357535WA	033	RM
King	Renton	17	57745	5357745WA	033	RN
King	Sammamish	17	61115	5361115WA	033	SM
King	SeaTac	17	62288	5362288WA	033	ST
King	Seattle	17	63000	5363000WA	033	SE
King	Shoreline	17	63960	5363960WA	033	SH
King	Skykomish	17	64855	5364855WA	033	SK
King	Snoqualmie	17	65205	5365205WA	033	SN
King	Tukwila	17	72625	5372625WA	033	TU
King	Woodinville	17	79590	5379590WA	033	WO
King	Yarrow Point	17	80150	5380150WA	033	YP
Pierce	Anderson Island	27			053	AI
Pierce	Auburn (pt)	27	03180	5303180WA	053	AU
Pierce	Bonney Lake	27	07170	5307170WA	053	BL
Pierce	Buckley	27	08570	5308570WA	053	BU
Pierce	Carbonado	27	09970	5309970WA	053	CA
Pierce	DuPont	27	18965	5318965WA	053	DU

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County	City/Town	WSDOT County #	FIPS City	OFM Long City	FIPS County	Local City Identifier
Pierce	Eatonville	27	20260	5320260WA	053	EA
Pierce	Edgewood	27	20645	5320645WA	053	EW
Pierce	Fife	27	23795	5323795WA	053	FF
Pierce	Fox Island	27			053	FI
Pierce	Fort Lewis	27			053	FL
Pierce	Fircrest	27	23970	5323970WA	053	FR
Pierce	Gig Harbor	27	26735	5326735WA	053	GH
Pierce	Heron Island	27			053	HI
Pierce	King County	27	033		053	KC
Pierce	Lakewood	27	38038	5338038WA	053	LD
Pierce	McCord AFB	27			053	MC
Pierce	Milton (pt)	27	46020	5346020WA	053	ML
Pierce	Orting	27	52005	5352005WA	053	OR
Pierce	Pierce County	27			053	PC
Pierce	Pacific (pt)	27	52495	5352495WA	053	PF
Pierce	Puyallup	27	56695	5356695WA	053	PY
Pierce	Raft Island	27			053	RI
Pierce	Roy	27	60160	5360160WA	053	RY
Pierce	Ruston	27	60510	5360510WA	053	RU
Pierce	South Prairie	27	66045	5366045WA	053	SO
Pierce	Steilacoom	27	67770	5367770WA	053	SM
Pierce	Sumner	27	68435	5368435WA	053	SU
Pierce	Tacoma	27	70000	5370000WA	053	TA
Pierce	University Place	27	73465	5373465WA	053	UP
Pierce	Wilkeson	27	78925	5378925WA	053	WI

Dry Dock

The Federal Railroad Administration (FRA) gathers data on railroads. We are not sure if this data will be added to Wa-Trans.

Rail Crossing		Contains data related to the class of a rail line
RailCrossingID	INTEGER	Surrogate Key. Sequential number auto-generated by the database upon insertion of a record. Used to uniquely identify a Rail Crossing record within the database.
(R) Rail Crossing Code	CHAR(1)	A 1-letter code assigned to RailCrossing
(R) Rail Crossing Description	VARCHAR(50)	Narrative description of the one character code, which describes the Rail Crossing.

- **Crossing Number** (6-digits followed by an alpha character).
- **Crossing Owner (Railroad or Company name)**
- **Crossing Surface (on main line)**
- **Is Crossing Illuminated?**
- **Quiet Zone (and times of effect)**
- **Type of Passenger Service (over crossing) – Domain**
 - **AMTRAK** only
 - **AMTRAK and Other** (commuter, tourist, etc.)
 - **Other**, including commuter, tourist, etc.
 - **None** (no passenger service)